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# Insects

## PART 12—Tabanidae

BY

**R. SENIOR-WHITE,**

F. E. S., F. R. S. T. M. & H.

*Honorary Correspondent, Zoological Survey of India, Malariaologist,  
Bengal-Nagpur Railway.*



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# Catalogue of Indian Insects.

## PART 12.—TABANIDAE.

### INTRODUCTION.

A systematic catalogue may be one of three kinds. It may summarize chaos, may mark a stage in the development of our knowledge of a group, or it may be the logical outcome of a finished and "final" revision. Of those in the first category, the immortal "*Catalogue of the Diptera of South Asia*," by van der Wulp, is a classical example, whilst the writer's "*Bombyliidae*" in the present series is a type of the third, although in few groups of plants or animals can it be said as yet that our systematic knowledge is approximately complete. The present part of the "*Catalogue of Indian Insects*" falls into the second category, summarizing the second stage in our knowledge of the family Tabanidae in India. The first revision of the family was published by V. L. Ruggles Senebier a year ago. Odd species have been collected by various collectors and stray pieces of additional synonymy made out. As a basis for further, intensive, work on the family the present time is a convenient one to "take stock". The result shows how fragmentary our knowledge is. The very uncritical list of species in the three principal genera of the family throughout the World, recently published in "*Genera Insectorum*" by de Meillon, shows 170 species of *Hamatopota*, 1140 of *Tabanus* and 200 of *Chrysops* as known. Allowing for these figures being somewhat large owing to yet un-effected synonymising, the Indian list of 31 *Hamatopota*, 75 *Tabanus* and 11 *Chrysops* appears remarkably poor. Seven other genera, three of them peculiar to the Region, with one or two species each, bring the Indian total in the family up to 126 species, but only the genus *Hamatopota*, the Indian species of which are 18 per cent. of the World total, indicates that here the present-day knowledge of the genus has kept pace with work in other areas. And yet this genus is probably the worst known of the major three in India, in the sense that more forms of it remain to be discovered than in the other two. However, if I am correct in this belief, then the Indian fauna of *Tabanus* and





and Pathankot), contain two undescribed species in Groups IV and V of the genus.

From the foregoing, then, it is clear that an enormous amount of more work has still to be done before the *Hæmatopota*-fauna of India is properly known, and the necessary additions to our knowledge can be made by anyone who will take the trouble to collect specimens and send them in for determination.

Turning now to *Tabanus*, we see a very similar state of ignorance. The Indo-Gangetic Plain East and Burma each contain twenty known species, whilst Rajputana yields not a single record, and Central India only one, being the locality given for a type by Walker three-quarters of a Century ago! Leese collected at least three undescribed species at Mohand, and the writer has recorded (*Mem. Dept. Agric. India*, vii, 106), an unidentified species from Chakrata in the Western Himalaya.

From the table it will be seen that Group I in the genus is mainly confined to intruders from the Palearctic Region, to which Scistan really belongs, and it is possible that some of these species do not enter India proper at all. None the less, as Surra in that zone is of great importance, and its control an Indian problem, these species have been included in the key and the body of the Catalogue.

The peculiarly coloured species of Group II seem to be inhabitants of hill regions and the country at their feet.

In the small Group III the only true Indian species, *ditornatus*, is more widely distributed in Africa than it is in Asia, but covers a larger area of the Old-World Tropics than any other species of the family, extending to China, where its only Eastern relative is found. *T. suffus*, in this Group, is Palearctic, and just enters the Region in the Western Punjab.

Group IV are mainly Plains species.

The species of Groups V and VI, with strikingly marked wings, are Malayan, only entering India in zones with strong affinities with that sub-Region.

Group VII contains most of the commonly and widely distributed species, as well as some localized rarities. Most of the species extend into Malaysia.

Group VIII is very poorly represented in India. It is Malayan, and its few Indian members are found in zones with strong affinities with Malaya.

The Indian species of Group IX have little affinity with further East, and are centered in India. *T. ruficentris* and *T. orientis* are widely distributed in North India. The known Indian distribution of *T. khasiensis*, the Khasia Hills and Meerut, is an excellent illustration of

our lack of knowledge. The two localities have little in common, save that they are both Oriental! There is a species not shown in the distribution table, peculiar, apparently, to the Nicobar Islands.

About half the species in Group X are purely Malayan. Those found in India are, as regards the zones in which they occur, distinctly of Malayan affinity, and some of them extend beyond the confines of the Empire eastward. One of the only two Tabanids known from the Andamans belongs to this Group, the species occurring also in Ceylon, Burma and Sumatra.

The sub-genus *Thaenopleres*, Group XI, is purely Western Himalayan and an intruder from the Palearctic.

The genus *Chrysops*, table III, is probably better known than the two previous, owing to the striking appearance of these insects. Only one species, *dispar* Fh., is commonly and widely distributed, and it probably occurs throughout the sub-Region, except to the North West. *C. flavocinctus*, *fasciatus* and *ficiusinus* are Malayan species only found in India in localities strongly associated faunistically with further East. *C. flavipes* is a Palearctic species not entering India proper, and *C. mloksternica* is a Chinese species found in Yunnan, to which the last remark also applies. The remaining species are of localized distribution, or are found in similar stations, such as hilltops. No species are known from Rajputana and the Eastern Himalaya.

In spite of their importance, not only as probable carriers of Surra, but as worriers of domestic animals in general, it will thus be seen that our knowledge, systematic and geographical, of the Tabanids is fragmentary in the extreme. If the present volume stimulates Veterinary Officers to accumulate material, which is easily done, as the flies do not have to be searched for, but are to be found on their patients for the looking, it is hoped that within a few years a very different Catalogue, especially zoo-geographically, may become not only possible but necessary.

In conclusion, the writer has to express his great obligation to Miss G. Ricardo, who has read through the first draft of the manuscript, and favoured him with additional references and localities, as well as a series of notes on doubtful points of synonymy, which have been incorporated in the final manuscript for press.



TABLE I—*contd.*

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KEYS TO SUB-FAMILIES AND TO GENERA, ADAPTED FROM  
DE SURCOUF.

- Hind tibiae without spines. No ocelli, at most  
a vestigial tubercle . . . . . *TABANINÆ*.  
Hind tibiae always spined. Usually three  
well-developed ocelli . . . . . *PANGONINÆ*

*TABANINÆ*.

1. Apical portion of third antennal segment  
of three divisions . . . . . *Hæmatopota* Meig.  
Apical portion of third antennal segment  
of four divisions . . . . . 2
2. Third antennal segment simple, no basal  
tooth or process . . . . . 3  
Third antennal segment with a basal  
tooth or process . . . . . 4
3. Antennæ arising from a frontal tubercle,  
third segment cylindrical. Palpi  
thickened basally, bent, apically  
pointed . . . . . *Udenocera* Ric.  
Antennæ not arising from a frontal  
tubercle, third segment conical.  
Palpi elongate, subulate . . . . . *Diachlorus* O. S.
4. Antennæ not arising from a prominent  
tubercle. Frontal calli usually present *Tabanus* Linn.  
Antennæ arising from a prominent tuber-  
cle. No frontal calli . . . . . *Neotabanus* Ric.

*PANGONINÆ*.

1. Third antennal segment of 8 divisions.  
Proboscis greatly prolonged . . . . . *Corizoncura* Rond.  
Third antennal segment of 5 divisions.  
Proboscis normal . . . . . 2
2. Third antennal segment with a basal  
tooth or process . . . . . *Gastroxides* Saund.  
Third antennal segment simple . . . . . 3
3. First and second antennal segments long,  
subequal . . . . . *Chrysops* Meig.

- First antennal segment long, second short . . . . .  
 4. Tibiæ normal . . . . .  
 Tibiæ large and flattened. Whole aspect of insect bee-like . . . . .

## TABANIDA.

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### TABANINÆ.

Shiraki, Taihoku Expt. Stn. Bull. (1918), 87-88; Surc, Gen. Ins. Fasc. 175, 25, [key to genera of World].

### KEY TO THE KNOWN INDIAN SPECIES OF *HÆMATOPOTA*. BASED ON RICARDO'S GROUPING.

[Generally applicable to ♀♀ only].

1. Legs uniform in colour . . . . . Group I.  
     Legs not uniform in colour . . . . . 2
2. Tibiæ without pale rings, but base of  
     front pair, at least, pale . . . . . Group II.  
     At least mid tibiæ with median and sub-  
     apical pale rings . . . . . 3

3. Typical rings on mid tibia only, all tibiae whitish basally . . . . . Group III  
 Typical rings on mid and hind tibiae . . . . . 1
4. First antennal segment abnormally broad and stout, at least as long as third segment . . . . . Group IV  
 First antennal segment normal in length and size . . . . . 2
5. Third antennal segment broad and flattened on first division, the last three divisions forming a narrow apical portion. First segment incrassate and equal to basal division of third segment . . . . . Group V  
 Third antennal segment more evenly tapered from base to apex . . . . . Group VI.

## GROUP I.

1. No spots on face . . . . . *rostris* Kn  
 A large, irregular shaped black spot on each side of antennae, reaching eyes . . . . . *trichota* Big.

## GROUP II.

1. Wings with pale bands or streaks, no typical rosette or spot-like markings . . . . . *strigilicornis* Brn. [ 5 ]  
 The usual rosettes and spots on wings.  
 Apical band of wing single . . . . . 2
2. Abdomen red-brown, with very distinct median stripe . . . . . *indiana* Big.  
 Abdomen yellow, an incomplete median stripe and large lateral grey spots . . . . . *canis* Wlk.

## GROUP III.

1. Apical band of wing double . . . . . *disimilis* Ric.  
 Apical band of wing single . . . . . 2
2. Facial stripe yellow with brown dots.  
 Wing markings very distinct . . . . . *unizonatus* Ric.  
 Facial stripe black, broader. Wing markings less clear-cut . . . . . *brevicornis* S. W.

## GROUP IV.

1. Apical band of wing double . . . 2  
     Apical band of wing single . . . *annandalei* Ric.
2. Abdomen with lateral grey spots . . . *litoralis* Ric.  
     Abdomen with only hind margins of  
     segments greyish . . . *rhizophoræ* S. W. ]

## GROUP V.

1. Wing with a pale, oblique transverse  
     streak only . . . *rubida* Ric.  
     Wing with the usual rosette markings . 2
2. Apical band of wing double . . . 3  
     Apical band of wing single . . . 4
3. Hind tibiæ strongly fringed . . . *javana* Wd.  
     Hind tibiæ not strongly fringed . . . *demellonis* S. W.
4. Apical band very broad, other pale mark-  
     ings very narrow . . . *albofasciatipennis* Brun.  
     All pale markings of wing approximately  
     equal in breadth, as usual . . . 5
5. First antennal segment incrassate, as  
     long as first division of third segment *lata* Ric.  
     First antennal segment narrower, not as  
     long as first division of third segment *assamensis* Ric.

## GROUP VI.

1. Apical band of wing double . . . 2  
     Apical band of wing single . . . 7
2. Apical bands very broad, almost filling up  
     apex of wing . . . *marginata* Ric.  
     Apical bands not almost filling up apex  
     of wing . . . 3
3. Both branches of apical band joined at  
     their base, then diverging . . . 4  
     Branches of apical band separate, com-  
     mencing on opposite borders of wing,  
     and usually overlapping in the middle 6
4. First segment of antenna shorter than  
     basal annulation of third . . . 5  
     First segment of antenna longer than  
     basal annulation of third . . . *tesselata* Ric.



5. Frontal callus yellow-brown, paired spot touching it . . . . . *brunnea* Ric.  
Frontal callus shining black, brown paired spots well separated . . . . . *maculosa* S. W.
6. First antennal segment longer than second . . . . . *longicauda* Ric.  
First antennal segment narrower, but nearly as long as whole third segment . . . . . *virgata* Ric.
7. Apical band very broad, reaching from outer to inner border of wing . . . . . 8  
Apical band of wing narrower . . . . . 9
8. A broad black band on face . . . . . *brunnea* Ric.  
No broad black facial band . . . . . *maculosa* Ric.
9. Apical band reaching from outer to inner border of wing . . . . . 10  
Apical band not reaching from outer to inner border . . . . . 11
10. Frons very narrow. A large coniform dark spot in place of usual paired spots . . . . . *purpurina* Aust.  
Usual paired spots present on frons . . . . . *brunnea* Ric.
11. Hind femora and apical two thirds of hind tibiae black fringed . . . . . *brunnea* S. W.  
Hind legs without noticeable fringes . . . . . 12
12. First antennal segment more than half as long as third . . . . . 13  
First antennal segment shorter than this . . . . . *maculosa* Ric.
13. A black band on upper part of face . . . . . *brunnea* Ric.  
No black facial band, but usually a spot on each side below . . . . . *maculosa* Ric.

### 1. *Hæmatopota*, Meigen.

*Hæmatopota*, Meig., Illig. Mag., ii, 267, 40, (1803), Wulp, Cat. Dipt. S. Asia, 66; Howlett, Ind. Ins. Life, tab. lxii, 5, [unnamed sp. figd.]; Ric., A. M. N. H. (7) xviii, 113; *id.*, R. I. M., iv, 321, [papers on Oriental spp. with keys]; Shiraki, Taihoku Expt. Stu. Bull. (1918), 88-92, [Formosan spp.]; Patt. & Cragg, T. B. Med. Ent., 291,

292, 295, [feeding point], 297,  
[oviposition]; Cragg, Sci. Mem.  
M. O. Ind., iv, [structure of *H.*  
*pluvialis*].

*Chrysozona*, Meig., Nouv. Class., 23, 34,  
(1800); Kert., Cat. Dipt., iii, 201;  
Verrall, "British Flies", v, 772,  
[reasons against adoption of name];  
Aust., African Blood-Sucking Flies,  
121, [do.], Surc., Gen. Ins. Fasc. 175,  
29, [key to sub-genera], 31, [sub-  
genera defined].

*Austena*, Surc., Bull. Mus. H. N. Paris,  
455, (1909); *id.*, Gen. Ins. Fasc. 175,  
29, [sub-genus].

*Parhamatopota*, Grunb., Zool. Anz., xxx,  
360, (1906); Surc., Gen. Ins. Fasc.  
175, 36, [sub-genus].

*Potisa*, Surc., Bull. Mus. H. N. Paris,  
455, (1909); *id.* & Gonz., Dipt. Vuln.  
Venezuela, ii, 29; *id.*, Gen. Ins. Fasc.  
175, 30, [sub-genus].

***albofasciatiennis*, Brunetti.**

*Hæmatopota albofasciatiennis*, Brun., Bhowali (Kumaon)<sup>1</sup>  
R. I. M., vii, 458-60, tab. xxxvii, 1,<sup>1</sup>  
(1912).

*Chrysozona albofasciatiennis*, Surc.  
Gen. Ins. Fasc. 175, 32.

***annandalei*, Ricardo.**

*Hæmatopota annandalei*, Ric., R. I. M., Shillong<sup>1</sup>  
iv, 335-6, tab. xvii, 21,<sup>1</sup> (1911); Brun., Umling (Assam)<sup>1</sup>  
*loc. cit.*, xxvi, 100, [♂ descr.]

*Chrysozona annandalei*, Surc., Gen. Ins. [Baroma (Assam) Igat-  
Fasc. 175, 32. puri (Bombay)]\*

***assamensis*, Ricardo.**

*Hæmatopota assamensis*, Ric., R. I. M., Nongpoh (Khasia)<sup>1</sup>  
iv, 343-4, tab. xvii, 29, (1911)<sup>1</sup> Shillong<sup>1</sup>

*Chrysozona assamensis*, Surc., Gen. Ins. [Dogaon]  
Fasc. 175, 32.

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\* Records of localities enclosed within square brackets have been added from material in the Pusa collection.—T. R. F.

**beesoni**, Senior White.

*Hamatopota beesoni*, S. W. Mem. Dept. Agric. Ind., vii, 146, tab. xi, 4, 5 (1922), 107, [note].<sup>1</sup> Bandipur (H. Tr.)<sup>1</sup>

**bilineata**, Ricardo.

*Hamatopota bilineata*, Ric., R. I. M., iv, 350-1, tab. xviii, 34, (1911)<sup>1</sup>.  
*Chrysosoma bilineata*, Surt., Gen. Ins. Fasc. 175, 32.

**brevis**, Ricardo.

*Hamatopota brevis* Ric., A. M. N. H., (7) xviii, 122-3, tab. vi, 19,<sup>2</sup> (1906).<sup>1</sup> Trincomalee (Ceylon)<sup>1</sup> \*  
 R. I. M., iv, 349-50, tab. xvi, 15.<sup>2</sup> Bangalore<sup>1</sup>,<sup>2</sup>  
 Punjab  
 Madras Pres. (H. M. Colln.)

**burmanica**, Senior White.

*Hamatopota burmanica*, S. W., Mem. Dept. Agric. Ind., vii, 147, tab. xi, 6, 7,<sup>1</sup> (1922); 107, [note]. Bandipur (Burma)<sup>1</sup>

**cana**, Walker.

*Hamatopota cana*, Wlk., List Dipt. B. M., i, 207,<sup>1</sup> (1843); Bigg. Bull. Soc. Zool. Fr., xvi, 79<sup>2</sup>; id. T. A. S. B., ix, 264<sup>2</sup>; Wulp. Cat. Dipt. S. Asia, 66<sup>2</sup>; Ric., A. M. N. H., (7) xviii, 116-17<sup>2</sup>; id. R. I. M., iv, 330<sup>2</sup>, [redescribed].  
*Chrysosoma cana*, Kert., Cat. Dipt., iii, 202<sup>2</sup>. Surt., Gen. Ins. Fasc. 175, 328.  
 1, 2, 3, 1, 2, 1, 2, \*  
 N. Bengal. (Probably from Terai). The collector, Dr. Campbell, was here stationed (vide Hooker's "Himalayan Journals").  
 Poona (B. M. Colln.)

**cingalensis**, Ricardo.

*Hamatopota cingalensis*, Ric., A. M. N. H., (7) xviii, 119, tab. v, 16<sup>1</sup>, (1906); id., R. I. M., iv, 351-2, tab. xvi, 15<sup>2</sup>; Henry, Trop. Agric., xlvii, 100<sup>2</sup>.  
*Chrysosoma cingalensis*, Surt., Gen., Ins. Fasc. 175, 32.  
 Trincomalee (Ceylon)<sup>1</sup>,<sup>2</sup>  
 Anuradhapura (Ceylon)<sup>1</sup>,<sup>2</sup>  
 Habarana (N. C. P. Ceylon)<sup>2</sup>  
 Matale (Ceylon)<sup>2</sup>

**demellonis**, Senior White.

*Hamatopota demellonis*, S. W., Mem. Dept. Agric. Ind., vii, 146, tab. xi, 1-3<sup>1</sup>, (1922).  
 Goa (Port. Ind.)<sup>1</sup>

*dissimilis*, Ricardo

*Hamatopota dissimilis*, Ric., R. I. M., N Kanara<sup>1</sup>  
iv, 331-2, tab. xvii, 22<sup>2</sup>, (1911).

*Chrysozona dissimilis*, Surc., Gen. Ins.  
Fasc 175, 33.

*fasciata*, Ricardo.

*Hamatopota fasciata*, Ric., R. I. M., iv, Shillong<sup>1</sup>  
358<sup>1</sup>, (1911). Darjiling District (B. M.

*Chrysozona fasciata*, Surc. Gen. Ins. Fasc. Colln )  
175, 33.

*fuscifrons*, Austen.

*Hamatopota cordigera*, Big., Bull. Soc Bengal<sup>1</sup>, 2, 3, 4, 5  
Zool. Fr., xvi, 76<sup>1</sup>, (1891); *id* Mem. Bondaung (Burma)<sup>1</sup>  
Soc. Zool. Fr., v, 626<sup>2</sup>, Wulp, Cat. Mohnyin (Burma)<sup>6</sup>  
Dipt. S Asia, 67<sup>2</sup>; Ric., A. M. N. H.,  
(7) xviii, 125, tab. vi, 21<sup>4</sup>

*Chrysozona cordigera*, Kert., Cat. Dipt.,  
iii, 202, Surc., Gen. Ins. Fasc. 175,  
33.

*Hamatopota fuscifrons*, Aust., A. M. N.  
H., (8) i, 411, (1908), [renamed];  
Ric., R. I. M., iv, 357-8, tab. xvii,  
17<sup>5</sup>; S. W., Mem. Dept. Agric. Ind.,  
vii, 107<sup>6</sup>.

[ Preoccupied by another *H. cordigera*, Bigot, from Abyssinia ].

*hindostani*, Ricardo.

*Hamatopota hindostani*, Ric., A. M. N. Bababuddin Hills  
H., (8) xix, 226<sup>1</sup>, (1917). (Mysore)<sup>1</sup>

*Chrysozona hindostanti*, (laps.), Surc. Gen. [ Dodabetta (Nilgiris) ]  
Ins. Fasc. 175, 33.

*immaculata*, Ricardo.

*Hamatopota immaculata*, Ric., R. I. M., Kanara (Bombay)<sup>1</sup>  
iv, 359-60, tab. xviii, 33<sup>1</sup>, (1911). Bombay<sup>1</sup>

*Chrysozona immaculata*, Surc., Gen. Ins.  
Fasc. 175, 33.

*inconspicua*, Ricardo.

*Hamatopota inconspicua*, Ric., R. I. M., Igatpuri (W. Ghats)<sup>1</sup>  
iv, 358-9, tab. xviii, 31<sup>1</sup>, (1911).

*Chrysozona inconspicua*, Surc., Gen. Ins.  
Fasc. 175, 33.

*indiana*, Bigot

- Hematopota indiana*, Big. Bull. Soc. Météor. Ind. (Ann. 11).<sup>2</sup>  
 Zool. Fr., xvi, 781, (1821); *id.*, Mem. Tr. Soc. Météor. Ind.<sup>2</sup>  
 Soc. Zool. Fr., v, 620; Wulp., Cat. [Stollberg] (Khartoum).<sup>1</sup>  
 Dipt. S. Asia, 67. Ric., A. M. N. H.,  
 (7) xviii, 124, tab. vi, 26; *id.*, R. I. M.,  
 iv, 328-9, tab. xvii, 192, [redescribed].  
*Chrysosoma indiana*, Kert., Cat. Dipt.,  
 iii, 203; Surc., Gen. Ins. Fasc. 175, 33.

*javana*, Wiedemann.

- Hematopota javana* Wd., Dipt. Exot., Pusa.<sup>1</sup>  
 100, (1821); *id.*, Ans. Zool. Ins. i, Calcutta.<sup>1</sup>  
 218<sup>1</sup>; Wulp., Dipt. Sumat. Exp., 31, Bengal (Goreah).<sup>1</sup>  
 tab. i, 12<sup>2</sup>; *id.*, Cat. Dipt. S. Asia, Lucknow Hills.<sup>4</sup>  
 66<sup>2</sup>; Wlk., List Dipt. B. M., i, 208; Baghar (Bihar).<sup>2</sup>  
*id.*, loc. cit., Suppl. i, 297, 13; Big. Pirmiana (Burma).<sup>2</sup>  
 Bull. Soc. Zool. Fr., xvi, 77; Howlett, Bandung, (Burma).<sup>1</sup>  
 Ind. Ins. Life, tab. Lin. 3, Ric., R. I. M., iv, 310-3, tab. xvii, 25<sup>4</sup>; Fletcher, { Pondicherry (S. India) }  
 Pusa Sci. Repr., 1920-21, 46, tab. Bihar (Goreah).<sup>1</sup>  
 iii, [bionomics, early stages]. S. W. Murree Hills (Punjab)  
 Mem. Dept. Agric. Ind., vii, 107<sup>2</sup>. Manipal (Bengal)  
*Chrysosoma javana*, Kert., Cat. Dipt., iii, Tiru near Pichavur  
 204; Surc., Gen. Ins. Fasc. 175, 34. Nongson (Assam)  
 Kathgodam (United Khasi hills (Assam)  
 Provinces) Katteri (Nilgiris, S. India).<sup>1</sup>

- ? *Hematopota asiatica*, Rond., Ann. Mus. Java<sup>1</sup>, 2, 6  
 Civ. Genoa, vii, 461, (1875), [laps.]; Sumatra<sup>2</sup>, 3  
 Kert., Cat. Dipt., iii, 204. Borneo.<sup>3</sup>  
 ? *Hematopota nigra*, Wd., Dipt. Exot., F. M. S.<sup>4</sup>  
 101, 7<sup>2</sup>, (1821); Kert., Cat. Dipt., *loc.*  
 204-5.

*lata*, Ricardo.

- Hematopota lata*, Ric., A. M. N. H., (7) Khasia Hills<sup>1</sup>, 2  
 xviii, 121-2<sup>1</sup>, (1906); *id.*, R. I. M., iv, N. Chin Hills<sup>1</sup>, 2  
 344-5, tab. xvii, 26<sup>2</sup>; *id.*, loc. cit., iv, Yunnan<sup>2</sup>  
 401<sup>2</sup>; Edw., Jo. F. M. S. Mus., viii, Mohand (U. P.)<sup>2</sup>  
 27<sup>2</sup>, [?]; C. Vet. Dept. Mem., ii, tab. Sumatra, montana<sup>4</sup>,  
 v, B, [?]; Fletcher and S. W., Proc. 19th. Ent. Meetg., Pusa, 226<sup>6</sup>.

- Chrysozona lata*, Surc., Gen. Ins. Fasc.  
175, 34.
- latifascia**, Ricardo.  
*Hæmatopota latifascia*, Ric., R. I. M., iv, Shillong<sup>1</sup>  
356, tab. xvi, 10<sup>1</sup>, (1911).  
*Chrysozona latifascia*, Surc., Gen. Ins.  
Fasc 175, 34.
- limbata**, Bigot  
*Hæmatopota limbata*, Big., Bull. Soc. Shillong<sup>1, 2, 3, 4, 5</sup>  
Zool. Fr., xvi, 78<sup>1</sup>, (1891); *id.*, Mem. Khasia Hills<sup>4, 5</sup>  
Soc. Zool. Fr., v, 626<sup>2</sup>; Wulp, Cat.  
Dipt. S. Asia, 66<sup>3</sup>, Ric., A. M. N. H.,  
(7) xviii, 115<sup>4</sup>, *id.*, R. I. M., iv, 325-  
6<sup>5</sup>, [redescribed].  
*Chrysozona limbata*, Kert., Cat. Dipt.,  
iii, 205, Surc., Gen. Ins. Fasc. 175,  
34.
- litoralis**, Ricardo  
*Hæmatopota litoralis*, Ric., A. M. N. H., Puri (E. Coast)<sup>1</sup>  
(8), xi, 546<sup>1</sup>, (1913)  
*Chrysozona litoralis*, Surc., Gen. Ins.  
Fasc. 175, 34.
- marginata**, Ricardo.  
*Hæmatopota marginata*, Ric., R. I. M., iv, Pusa<sup>1</sup>  
347-8, tab. xviii, 32<sup>1</sup>, (1911) Goalbathan (E. Bengal)<sup>1</sup>  
*Chrysozona marginata*, Surc., Gen. Ins. Tezporo (Assam)<sup>1</sup>  
Fasc 175, 34. Bihar (B. M. Col.)  
[Saran (Bihar)]
- montana**, Ricardo  
*Hæmatopota montanus*, Ric., A. M. N. H., Bababuddin Hills<sup>1</sup>  
(8) xix, 225<sup>1</sup>, (1917) Coonoor<sup>2</sup>  
*Hæmatopota montana*, Patton, Ind., J. Mahableshwar (B. M.  
Med. Res., x, 67<sup>2</sup>. Col.)  
*Chrysozona montana*, Surc., Gen. Ins. [Santikoppa, Sidapur  
Fasc. 175, 34. and Pol. betta (Coorg)  
Shillong, (Assam)]
- rhizophoræ**, Senior White.  
*Hæmatopota rhizophoræ*, S. W., Spol Trincomali (Ceylon)<sup>1</sup>  
Zeyl., xi, 387, tab. i, 1, (1921).
- ricardonis**, Sen or White  
*Hæmatopota ricardonis*, S. W., Spol. Ratnapura (Ceylon)<sup>1</sup>  
Zeyl., xvi, 209, tab. vii, 1-3<sup>1</sup>, (1925).



**unizonata, Ricardo.**

- Hematopota unizonata*, Ric., A. M. N. H., Hakgala<sup>1, 2</sup>  
 (7) xviii, 118, tab v, 15, 15A<sup>1</sup>, (1906); Newera Eliya<sup>2</sup>  
*id.*, R. I. M., iv, 332-3, tab. xvi, 12, Pundaluoya<sup>2</sup>  
 13<sup>2</sup>; Pratt, Jo. Trop. Vet. Sci, iv, Hatton<sup>4</sup>  
 390-4<sup>2</sup>, [ F M S. distribution ]; Long-  
 stafi, 'Butterfly Hunting,' 384<sup>4</sup>; Galagedera [ all Ceylon  
 Edw., Jo. F. M. S. Mus, vii, 27<sup>5</sup>, [ ? ] Hills]  
*Chrysozona unizonata*, Surc., Gen. Ins. F. M. S.<sup>3</sup>  
 Fasc 175, 36. Sumatra (mountains)<sup>3</sup>

**2. Udenocera, Ricardo.**

- Udenocera*, Ric., A. M. N. H., (7) xiv,  
 352, (1904), Kert., Cat Dipt., iii,  
 210; Ric, R. I. M., 361-2, Surc,  
 Gen Ins Fasc 175, 48

**brunnea, Ricardo.**

- Udenocera brunnea*, Ric., A. M. N. H., Kandy (Ceylon)<sup>1, 2</sup>  
 (7), xiv, 355<sup>1</sup>, (1904); *id.*, R. I. M.,  
 iv, 362-3, tab xvi, 8<sup>2</sup>, Kert., Cat  
 Dipt, iii, 210; Surc., Gen Ins Fasc  
 175, 49, [ description requested ], tab  
 ii, 12a  
 ? *Chrysops parallelus*, Wlk, Proc Linn Batjan Ids <sup>3, 4</sup>  
 Soc., Lond., v. 276<sup>3</sup>, (1861)  
<sup>2</sup> *Diachlorus parallelus*, Ric, A. M. N. H.,  
 (7) ix, 372<sup>4</sup>.

**3. Diachlorus, Osten-Sacken.**

- Diachlorus*, O-S, Mem. Boston N. H. S.,  
 ii, 475, (1876), Kert., Cat. Dipt., iii,  
 211; Surc., Gen. Ins Fasc 175, 49.  
*Diabasis*, Macq., Suit à Buff, i, 207,  
 (1834), [ nec Hoffmsg, 1819 ].

**fulvescens, Brunetti.**

- Diachlorus fulvescens*, Brun., R. I. M., Dha Kuri (Kumaon)<sup>1</sup>  
 vii, 456-8<sup>1</sup>, (1912); Surc., Gen. Ins  
 Fasc., 175, 51, [ wrong date quoted ].



KEY TO THE KNOWN INDIAN SPECIES OF *Thrips*[Adapted from Ricardo. Generally applicable to *Thrips* only.]

1. Eyes bare . . . . . 2  
     Eyes hairy (sub-genus *Thesiopterus*) . . . . . Group XI
2. Frons with varying arrangement of calli . . . . . 3  
     Frons with no calli . . . . . Group IV
3. Frons with two separate calli . . . . . 4  
     Frons with one square, narrow or oblong  
     callus, which is always prolonged  
     towards the vertex by a more or less  
     narrow line . . . . . 6
4. First callus usually transverse, second  
     irregular in shape smaller. Frons  
     3-6 times as long as broad. Small  
     spp., 9-14 mm. long . . . . . 5  
     Both calli small, round, spot like, one  
     above the other . . . . . Group III
5. Thorax and scutellum concolorous. Ab-  
     domen unbanded . . . . . Group I  
     Scutellum pale haired. Abdomen with  
     pale bands . . . . . Group II
6. Wings with spots or bands . . . . . Group V  
     Wings distinctly dark marked, but not  
     banded. Large spp. 18-23 mm. long . . . . . Group VI  
     Wings not noticeably marked . . . . . 7
7. Abdomen with stripes and or bands . . . . . 8  
     Abdomen without stripes or bands . . . . . Group X
8. Species with one or more usually con-  
     tinuous stripes on abdomen . . . . . Group VII  
     Species with median and or lateral spots  
     on abdomen, not usually forming a  
     continuous stripe . . . . . Group VIII  
     Species with pale bands and sometimes  
     spots on abdomen . . . . . Group IX

## GROUP I.

1. Femora black or grey . . . . . 2  
     Femora yellow . . . . . 6
2. Femora black, front tibiae pale in whole  
     or part . . . . . 3  
     Femora grey, front tibiae black . . . . . *leleupi* Aust.

3. Thorax and abdomen shining black, latter with narrow red segmentations . . . *hirtipalpis* Ric.  
 Thorax with grey tomentum, usually more or less forming stripes . . . 4
4. Frons 7-8 times as long as wide 1st posterior cell, (in ♀ only) narrowed or closed . . . *eggeni* Schin.  
 Frons broader, 5 times as long as wide. 1st posterior cell normal . . . 5
5. Antennæ black . . . *glaber* Big  
 Antennæ reddish . . . *excelsus* Ric.
6. Abdomen black, with three grey stripes . *macer* Big.  
 Abdomen mainly black, unstriped, some reddish laterally . . . 7
7. Abdomen black, frons less than 3 times as long as wide . . . *pulverifer* Wlk.  
 Antennæ yellow. Frons  $3\frac{1}{2}$ - $4\frac{1}{2}$  times as long as wide . . . 8
8. Four round black dots on fore border of all abdominal segments except last . *pulchellus* Lw.  
 Abdomen with black median stripe, extended to sides along hind margins, and occupying nearly all of last 3 segments dorsally . . . *adjacens* Ric.

## GROUP II.

1. Brown species, scutellum and abdominal bands yellow-haired . . . 2  
 Black species, scutellum and abdominal bands white-haired . . . 3
2. Abdomen with 6 narrow bands. Front tibiæ pale on basal two-thirds only . *flavicinctus* Ric.  
 Abdomen with 2 broad bands. Front tibiæ with only extreme tips black . *leucocnematus* Big.
3. Abdomen with 2 bands. Front tibiæ pale on basal two-thirds only . . . *bicinctus* Ric.  
 Abdomen with 6 bands. Front tibiæ with only extreme tips black . . . *sexcinctus* Ric.

## GROUP III.

1. Abdomen yellowish, with median and lateral brown or black stripes . . . *ditarsatus* Macq.

Abdomen blackish grey with 3 series pale spots . . . . . *sepioides* sp.

## GROUP IV

1. Abdomen brown, reddish basally, covered with grey tomentum, with two small greyish spots on each segment. Wings with no appendix. 7-11 mm. . . . . *virgo* Wtl.
- Abdomen blackish brown, with median and lateral grey tomentose spots. Wings with an appendix. Long 13 mm. . . . . *media pallens* Ric.

## GROUP V.

- 1 First posterior cell open . . . . . 2  
First posterior cell closed . . . . . *kalyptra* S. W.
2. Frons narrowest at vertex. Abdomen reddish, with small white median spots . . . . . *opisthus* Wlk.
- Frons narrowest anteriorly. Abdomen yellowish, with larger white median spots . . . . . *melanogaster* Big.

## GROUP VI.

1. First posterior cell closed or greatly narrowed apically . . . . . 2  
First posterior cell open as usual . . . . . *auriflamma* Wlk.
2. Abdomen reddish brown, with grey tomentose bands and median spots. First posterior cell closed. Palpi slender . . . . . *xephodes* Big.
- Abdomen brown, with grey tomentose bands but no median spots. First posterior cell narrowed in the margin. Palpi large, broad . . . . . *albifasciatus* Ric.

## GROUP VII.

1. Frontal callus oblong or narrow with linear extension. Frons at least 5 times as long as broad . . . . . 2

Frontal callus large, somewhat protuberant, quadrate, with short linear extension. Frons 3-4 times as long as broad . . . . .	12	
Abdomen with lateral stripes and spots in addition to the median stripe . . . . .	3	
Abdomen with no lateral spots, or only isolated ones on second segment . . . . .	8	
Frontal callus with a spindle shaped linear extension . . . . .	4	
Frontal callus with a narrower linear extension . . . . .	5	
Grey abdominal median and lateral stripes all of same length . . . . .		<i>tenens</i> Wlk.
Median stripe beginning only on 3rd segment, lateral stripes ending on 3rd or 4th segment . . . . .		<i>striatus</i> Fb.
Lateral spots large and distinct . . . . .	6	
Lateral spots small and indistinct. Thorax blackish. Abdomen reddish yellow . . . . .		<i>conicus</i> Big.
Lateral spots small but distinct. Forehead narrower anteriorly than in above species . . . . .		<i>indiscriminatus</i> Ric.
Median stripe composed of spots of equal size, not very large . . . . .	7	
Median stripe composed of unequal sized spots, those on 3rd and 4th segments very large and conspicuous. Femora blackish . . . . .		<i>speciosus</i> Rac.
Thorax and abdomen lilac or blackish brown. Femora blackish . . . . .		<i>rubidus</i> Wd.
Thorax, abdomen and femora reddish brown . . . . .		* <i>priscus</i> Wlk.
Median stripe grey tomentose, or white or yellow haired . . . . .	9	
Median abdominal stripe golden haired . . . . .	11	
Median abdominal stripe black, with a narrow grey stripe often apparent on it . . . . .		<i>abscondens</i> Wlk.

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\* Recently sunk by Aaaten in *rubidus* Wd.

9. Frons barely half as wide as anteriorly as at vertex. Small brown species. . . . . *infrigidus* Wlk.  
 Frons parallel-sided or nearly so. . . . . 10
10. Large black or reddish brown species, median abdominal stripe narrow. Femora black. Wings tinged brown. . . . . *maculatus* Wlk.  
 Brown species, median abdominal stripe broad, and with 2 round spots on 2nd segment. Femora reddish. Wings brown on fore border. . . . . *brunneipennis* Wlk.
11. Frons parallel-sided. Abdomen yellowish brown, median stripe dull, indistinct. . . . . *arctatus* Wlk.  
 Frons narrowed anteriorly. Abdomen yellowish-brown, median stripe broad. Front femora yellowish. Wings brown, especially on fore border. . . . . *hyacinthus* Wlk.
12. Small black species. Median abdominal grey stripe beginning on third segment, lateral stripes ending on second segment. . . . . *juvenculus* Wlk.  
 Small brown species. Abdomen with complete median grey stripe. . . . . *pallens* Ric.

## GROUP VIII.

1. Frons narrow, 6-10 times as long as wide anteriorly, with long, narrow frontal callus. . . . . 2  
 Frons broader, 4-5 times as long as wide, with large, square or pyriform callus. . . . . 5
2. Brown, reddish or yellowish, median sized or large species, median abdominal spots triangular, greyish or yellowish. . . . . 3  
 Reddish species with black spots on 2nd and 3rd abdominal segments. . . . . 4
3. Abdomen reddish yellow with small median white spots. . . . . *rubicundus* Mac  
 Abdomen reddish brown, with long triangular median white spots, usually joining one another. . . . . *indianus* Ric.

Tibiae and tarsi blackish . . . *fuscomaculatus* Ric.  
Tibiae and tarsi reddish . . . *fuscomaculatus* var. *allic-*  
*maculatus* Ric.

Frontal callus square. Small black  
species with white-haired median  
abdominal spots. Legs blackish.  
Tibiae yellowish . . . *leucopogon* Big.

Frontal callus pyriform. Large reddish  
brown species with median grey trian-  
gular abdominal spots. Legs reddish-  
brown . . . *discrepanis* Ric.

GROUP IX.

Abdomen blackish-brown, the first 2 segments covered with grey tomentum	<i>reflexentis</i> Fl. (5)
Abdomen of usual pattern and appearance	2
Frons narrow, 7-8 times as long as broad.	
Frontal callus narrow, with a linear extension	3
Frons broader, 4-5 times as long as broad.	
Frontal callus large, with a stout, broad or spindle-shaped extension	8
Large species, abdomen with very narrow pale bands	4
[Smaller species, abdomen with whitish bands	6
Brown species, scutellum and sides of thorax with pale tomentum	<i>albocostatus</i> Big.
Black species, no such pale tomentum	5
Abdomen fulvous segmented	<i>explicatus</i> Wlk.
Abdomen not fulvous segmented	<i>mampurensis</i> Ric.
Frons narrower anteriorly	7
Frons parallel sided Frontal callus narrow, not reaching eyes. Antennæ, palpi and legs black. Wings faintly brownish	<i>khasiensis</i> Ric.
Larger species Antennæ, palpi and legs wholly black	<i>nicobarensis</i> Schin.
Smaller species. Antennæ black, palpi grey. Basal half of front and basal 4-5ths of posterior tibiæ yellowish	<i>angustilimbatus</i> S. W.

8. Brown or black species . . . . . 9  
Reddish yellow species . . . . . 10
9. Abdomen with broad white band and  
large triangular median spot . . . . . 9  
Bands and spots on abdomen narrower  
Smaller species . . . . . 10
10. Abdomen reddish-yellow, darkened  
apically . . . . . 11  
Abdomen basally reddish-yellow, lat. band  
four segment black . . . . . 11
11. Femora black . . . . . 11  
Femora yellow . . . . . 11
12. Sub-callus dull . . . . . 11  
Sub-callus shining . . . . . 11

## GROUP X.

1. Black or brown species, frons narrow  
anteriorly. 15-20 mm long . . . . . 3  
[Dark reddish-brown species, 18-22 mm.  
long . . . . . 3  
Reddish-yellow species, 16-21 mm long . . . . . 4  
Small species of all colours from black to  
yellow under 16 mm. long . . . . . 3
2. Thorax paler than abdomen, with yel  
lowish tomentum and pubescence . . . . . 3  
Thorax not paler than abdomen, reddish  
brown with grey-blue tomentum . . . . . 3
3. Frons 7 times as long as broad. Front  
coxae with white hair . . . . . 3  
[Frons 10 times as long as broad. Front  
coxae with black hair . . . . . 3
4. Large species, 20-24 mm. Thorax,  
antennae, palpi and legs yellow . . . . . 3  
Smaller species, 16-19 mm. long . . . . . 3
5. Frons narrowest at vertex. Legs wholly  
red, . . . . . 3  
Frons narrowest anteriorly. Legs black,  
tibiae white at base . . . . . 3
6. Frons 5-6 times as long as broad . . . . . 7  
Frons 7-10 times as long as broad, narrowest  
anteriorly . . . . . 12

7. Frons narrowest anteriorly. Small reddish-brown species . . . *trinominata* S. W.  
Frons parallel sided, or nearly so . . . 8
8. Reddish-brown species. Frontal callus always distinct . . . 9  
Yellow species. Frontal callus often indistinct . . . *flaviventris* Big.
9. Thorax and scutellum blackish. Antennæ black at tip . . . 10  
Thorax and scutellum reddish. Antennæ not black at tip . . . 11
10. Femora black. Wings slightly tinged brown . . . *diversifrons* Ric.  
Femora yellowish. Wings grey, with hyaline streaks in cells . . . *demellonis* S. W.
11. Abdomen reddish-brown, unicolorous. Legs reddish-yellow, femora often darker . . . *subcinereascons* Ric.  
Abdomen with indistinct zig-zag bands of grey tomentum. Legs blackish, femora yellowish . . . *obconicus* Wilk
12. Sub-callus bare, shining and tuberculous . . . 13  
Sub-callus not bare, shining, tuberculous . . . 14
13. Legs reddish-yellow, front tarsi darker. Abdomen yellowish . . . *tuberculatus* Ric.  
Legs black, tibiæ white. Abdomen reddish-brown or black . . . *ceylonicus* Schin.
14. Femora black, tibiæ yellowish . . . *fuscicauda* Big.  
Femora yellowish . . . *subhirtus* Ric.

## GROUP XI.

1. Frons with 2 transverse calli, subcallus bare and shining. Abdomen black with white-haired bands . . . *subcallosus* Ric.  
Frons with one callus. Subcallus not bare and shining . . . 2
2. Frontal callus black, claviform, with spindle-shaped extension. Abdomen black, reddish at sides of basal segments. Segmentations yellow haired, often produced medianly as basal spots . . . *hirtus* Ric.



Frontal callus small, indistinct. Antennae black, only reddish on sides of 2nd segment, the whole covered with golden-yellow pubescence.

[ Not included in key: *T. japonicus* ]

The following species, originally described from 'India Or', are not included in the catalogue of India as they have been recognized, if at all, subsequently from localities only, and were probably originally described from

Species.	Synonyms	Described from
<i>basalis</i> Macq.	..	Indi. Or.
<i>brunneus</i> Macq.	..	India Or.
<i>orientalis</i> Wd.	..	East India
<i>severlei</i> Macq.	<i>pynostata</i> Wlk.	East India

#### 4. *Tabanus*, Linnaeus.

*Tabanus*, Linn., F. Swed., 462, (1761); Kert., Cat. Dipt., iii, 217, R. r. R. L. M., iv, 111-258, [revision of Oriental spp.]; Shiraki, Taihoku Expt. Sta. Bull., (1918), 119-123, 188-192 [Formosan spp.]; Patt. & Cragg, T. B. Med. Ent., 277-288. [key to Oriental spp.]; Szilady, Ent. Mittell., iv, 93; Surc., Gen. Ins. Fasc. 175, 54-63, [subdivisions]; Steinheil, Arb. Lab. Warschen, 1896, [also in Zool. Centralbl., iv, 873, (1897)] [mouth and method of suction]; Cornwall & Patt., I. Jo. Med. Res., ii, 539-93, [salivary secretion]; Hill, Bull. Ent. Res., xii, 41-59, figs., [biology of 3 Australian spp.]; Cragg, I. Jo. Med. Res., vii, 648-63, tabs. lxi-lxiii, [secretion and epithelial regeneration in mid-intestine]; Aust., Bull. Ent. Res., xii, 433-55, [Siamese spp. with key]; *id.*, *loc. cit.*, x, 292-321, [Palestine spp. with key].

*Atylotus*, O.-S., Mem. Boston N. H. S.  
ii, 126, (1876). Shiraki, Taihoku Expt.  
Stn. Bull., (1918), 162, [Formosan  
spp.].

[A valid sub-genus, used quite incorrectly by Bigot.]

*Theroplectes*, Zeller, Isis, xi, 819, (1842).

A valid sub-genus.

*Bellardia*, Rond., Arch. Zool. Modena,  
iii, 79, (1863).

Invalid.

**abscondens**, Walker.

*Tabanus abscondens*, Wlk., Trans. Ent. Soc., v, 275<sup>1</sup>, (1860), Wulp. Cat. Dipt. S. Asia, 60<sup>2</sup>, Big., T. A. S. B. ix, 264<sup>3</sup>; Ric., R. I. M., iv, 161<sup>4</sup>; Kert., Cat. Dipt., iii, 217, Surc., Gen. Ins. Fasc. 175, 58.

Burma<sup>1, 2, 3</sup>  
N Chin Hills<sup>1</sup>  
Dawnat Range  
(Tenasserim)<sup>4</sup>  
-----  
China<sup>4</sup>

**adjacens**, Ricardo.

*Tabanus adjacens*, Ric., R. I. M., iv, 248<sup>1</sup>,  
(1911); Surc., Gen. Ins. Fasc. 175, 58.

Perso-Baluchistan  
Frontier<sup>1</sup>

**albocostatus**, Bigot.

*Atylotus albocostatus*, Big., Mem. Soc.  
Zool. Fr., v, 649<sup>1</sup>, (1892)

"India"<sup>1, 2</sup>

*Tabanus albocostatus*, Wulp., Cat. Dipt.  
S. Asia, 63<sup>2</sup>, Kert. Cat. Dipt., iii,  
219; Ric., R. I. M., iv, 190<sup>3</sup>, [*albo-*  
*scutatus*, (*laps.*), in key on p. 122];  
Surc., Gen. Ins. Fasc. 175, 59

Not recognized since original description. Type redescribed by  
Ricardo.

**albofasciatus**, Ricardo.

*Tabanus albofasciatus*, Ric., R. I. M., iv,  
146-7<sup>1</sup>, (1911), Surc., Gen. Ins. Fasc.  
175, 59.

Shillong<sup>1</sup>

**angustilimbatus**, Senior White.

*Tabanus angustilimbatus*, S. W., Spol. Zeyl., xii, 389<sup>1</sup>, (1924)

Marlbe Valley (Ceylon)<sup>1</sup>

**atrohirtus**, Ricardo

*Tabanus atrohirtus*, Ric., R. I. M., iv,  
209<sup>1</sup>, (1911); Edw., F. M. S. Mus. Jc.,  
vii, 28<sup>2</sup>; Surc., Gen. Ins. Fasc. 175,  
61.

Ceylon<sup>1</sup>

Sumatra (Mount)<sup>2</sup>

**aeriflamma, Walker.**

- Tabanus aeriflamma*, Walker, Cat. Dipt., subgen. 1.  
 P. M., ii, 177<sup>1</sup>, (1851), Wulp., Cat. Subgen. Aeriflamm<sup>2</sup>,  
 Inpt. S. Asia, 59<sup>1</sup>; B. G., T. A. S. B., N. S. H. 19<sup>1</sup>,  
 L., 261<sup>2</sup>; Kert., Cat. Dipt., iii, 223<sup>1</sup>,  
 Ric., R. I. M., iv, 148<sup>1</sup>; S. W. Mem. Dept. Agric. Ind., vi, 164<sup>2</sup>; Surc.,  
 Gen. Ins. Fasc. 175, 61.

**auristriatus, Ricardo.**

- Tabanus auristriatus*, Ric., R. I. M., iv, 149<sup>1</sup>; (N. Kanara)<sup>1</sup>  
 161<sup>2</sup>, (1911); Patel, Pusa Jo. Med. Res., 1911, 61<sup>2</sup>,  
 S., 61<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 61.

[The Burmese record, (S. W. Mem. Dept. Agric. Ind., vi, 165<sup>2</sup>), is an error in determination.]

**bimectus, Ricardo.**

- Tabanus bimectus*, Ric., R. I. M., iv, 152<sup>1</sup>; N. Kanara<sup>1</sup>  
 3<sup>1</sup>, (1911); Shiraki, Taihoku Expt. Sta. Bull. (1918), 234-40, tab. v, 3<sup>2</sup>; Mohand (H. P.)<sup>2</sup>  
 C. Vet. Dept. Mem., ii, tab. vi, 10<sup>1</sup>; F. M. S.<sup>1</sup>  
 Fletcher & S. W., Proc. iv, Ent. Measg., 1910, 226; Patton, I. Jo. Med. Res., 5,  
 67<sup>1</sup>; Surc., Gen. Ins. Fasc. 175, 62; Formosa<sup>2</sup>

**birmanicus, Bigot.**

- Atylotus birmanicus*, Big., Mem. Soc. Zool. Fr., v, 658<sup>1</sup>, (1892). Burma<sup>1</sup>, 2, 3  
 Lushai Hills<sup>2</sup>  
*Tabanus birmanicus*, Wulp., Cat. Dipt. S. Asia, 63<sup>2</sup>; Kert., Cat. Dipt., iii, 228; Ric., R. I. M., iv, 200-1<sup>2</sup>; Nongpoh (Khasia)<sup>2</sup>  
 Shiraki, Taihoku Expt. Sta. Bull. (1918), 420-4, tab. viii, 8, xi, 13-14<sup>2</sup>; F. M. S.<sup>2</sup>  
 Surc., Gen. Ins. Fasc. 175, 62. Formosa<sup>2</sup>

**brunnipennis, Ricardo.**

- Tabanus brunnipennis*, Ric., R. I. M., iv, 160-1, tab. xiii, 9<sup>1</sup>, (1911); Basi (N. Kanara)<sup>1</sup>  
 160-1, tab. xiii, 9<sup>1</sup>, (1911); Patel, Pusa Jo. Med. Res. (1919-20), 97<sup>2</sup>; Aust. Bull. Ent. Res., xii, 444<sup>2</sup>; S. W. Mem. Dept. Gorakhpur (H. P.)<sup>2</sup>  
 Pusa<sup>2</sup>  
 S. Malabar<sup>2</sup>

- Agric. Ind., vii, 105<sup>4</sup>; Surc., Gen. Ins. Fasc. 175, 63. Mohnyin (U. Burma)<sup>4</sup>  
[ Bistupur (Bankura District)  
Puri  
Sidapur (Coorg)  
Khurda  
Santikoppa (N. Coorg)  
Polibetta (S. Coorg)  
Ranchi  
Samastipur (Bihar)  
Kasaragode (S. Kanara)]
- 
- Siam<sup>1, 3</sup>
- ceylonicus**, Schiner.  
*Tabanus ceylonicus*, Schin., Novara Reise, Dipt., 93<sup>1</sup>, (1868); Wulp, Cat. Dipt. S. Asia, 61<sup>2</sup>; Kert., Cat. Dipt. iii, 233; Ric., R. I. M., iv, 223-4<sup>3</sup>; Surc., Gen. Ins. Fasc. 175, 64. Ceylon<sup>1, 2</sup>  
Trincomali (Ceylon)<sup>2</sup>
- 
- Tabanus nitidulus*, Big., Mem. Soc. Zool. Fr., v, 679<sup>4</sup>, (1892); Wulp, Cat. Dipt. S. Asia, 65; Kert., Cat. Dipt. iii, 265. Malay Penin.<sup>2</sup>  
Java<sup>2, 4, 5</sup>  
Sumatra<sup>3</sup>
- conicus**, Bigot.  
*Atylotus conicus*, Big., Mem. Soc. Zool. Fr., v, 650<sup>1</sup>, (1892). "India"<sup>1, 2</sup>  
Calcutta<sup>6</sup>
- 
- Tabanus conicus*, Wulp, Cat. Dipt. S. Asia, 63<sup>2</sup>; Kert., Cat. Dipt., iii, 236. Java<sup>3, 4, 6</sup>
- Atylotus abbreviatus*, Big., Mem. Soc. Zool. Fr., v, 670<sup>3</sup>, (1892). Formosa<sup>5, 6</sup>  
F. M. S.<sup>6</sup>
- Tabanus abbreviatus*, Wulp, Cat. Dipt. S. Asia, 63<sup>4</sup>; Kert., Cat. Dipt., iii, 217; Shiraki, Taihoku Expt. Stn. Bull., (1918), tab. vii, fig. 1<sup>5</sup>; Ric., R. I. M., iv, 153-4<sup>6</sup>; Surc., Gen. Ins. Fasc. 175, 58.
- consanguineus** Macquart.  
*Tabanus consanguineus*, Macq., Dipt. Exot., i, 50<sup>1</sup>, (1850); Big., T. A. S. B., lx, 264<sup>2</sup>; Wulp, Cat. Dipt. S. Asia, 59<sup>3</sup>; Ric., R. I. M., iv, 197-8<sup>4</sup>; Surc., Gen. Ins. Fasc. 175, 65; Kert., Cat. Dipt., iii, 236. Malabar Coast<sup>1, 2, 3, 4</sup>.

[Not recognized since original description. Redescribed by Ricardo from type.]

**demellonis**, Senior White

*Tabanus demellonis*, S. W., Spol. Zeyl. Colon. (Pars. Ind.)<sup>1</sup>  
xii, 391<sup>1</sup>, (1921).

**discrepans**, Ricardo.

*Tabanus discrepans*, Ric., R. I. M., iv, Ceylon<sup>1</sup>  
185, tab. xiv, 17<sup>1</sup>, (1911); Surc., Gen.  
Ins. Fasc. 175, 66.

**diteniatus**, Macquart.

*Tabanus diteniatus*, Macq. Dipt. Exot.,  
i, 126<sup>1</sup>, (1838). Wlk., Last Dipt. II M.,  
v, 236, 355; Bezzi, Ann. Mus. Civ.  
Genoa, (2) xii (32) 184; Aust., Rep.  
Welle Lab. (1906) 57, l. 22; *id.*  
'African B. S. Flies,' 118, tab. xi, 82.  
Kert., Cat. Dipt., iii, 298, Brau., Spol.  
Zeyl., vi, 170<sup>4</sup>; Ric., R. I. M., iv, 131<sup>5</sup>;  
Old, Jo. Trop. Vet. Sci., iv, 408;  
Gaiger, *loc. cit.*, v, 69; Lefroy, Pusa  
Bull. 7, p. 21; D. Brock., Bull. Ent.  
Res., i, 56.<sup>7</sup> [habits]; King, *loc. cit.*, i,  
265-74,<sup>8</sup> [bionomics; larva descrd.]; Sen-  
derson, *loc. cit.*, ii, 111, [habits], Simp-  
son, *loc. cit.*, ii, 215-321<sup>10</sup>, *id.*, *loc. cit.*,  
iii, 185<sup>11</sup>. Neave, *loc. cit.*, iii, 208,<sup>12</sup>  
[eye colours]; King, *loc. cit.*, v, 247-5,  
tab. xxvi, 1, 2,<sup>13</sup> [bionomics]; Ric., *loc.*  
*cit.*, vi, 407<sup>14</sup>. Patt. & Cragg, T R. Ent.,  
295, tab. xlii, 7, [feeding point]; de  
Mello, Proc. ivth. Ento. Meetg. Pusa,  
44,<sup>15</sup> [?]; C. Vet. Dept. Mem. ii, tab. i,  
110; Fletcher & S. W., Proc., ivth. Ento.  
Meetg. Pusa, 226; Aust., Trans. R. S.  
T. M. & H., xv., 261, abs., R. A. E. (B),  
x, 143<sup>17</sup>; Surc., Gen. Ins. Fasc. 175, 66.

*Tabanus bipunctatus*, Wulp., Leyd. Mus.  
Notes, vii, 75, tab. v, 5,<sup>16</sup> (1885).

*Tabanus bristatus*, Mats., Thoms. Ins.  
Japan, addit. ii, 381, tab. xxii, 12,<sup>18</sup>  
(1916).

E. India<sup>18</sup>

Shimla District<sup>17</sup>

Peroo Maluchellan Front-  
ier<sup>17</sup>

Pusa<sup>7</sup>

Bangal<sup>10</sup>

Medrao Co. A<sup>12</sup>

Umballa<sup>1</sup>

Bahghai (Orissa)<sup>8</sup>

Part India<sup>10</sup>

Mohand (U. P.)<sup>10</sup>

Tarapur<sup>1</sup>

Pachankot (CROSS)

D. Ghazipur (CROSS)

dera Ismail Khan

Mianwah (Punjab)

Nasran

Tank (N. W. F.)

Coimbatore (S. India)<sup>1</sup>

Japan<sup>11, 12</sup>

China<sup>5</sup>

Hong Kong<sup>14</sup>

Africa (throughout),<sup>2, 3,</sup>  
8, 9, 10, 11, 12, 13, 14, 15.

*Tabanus fuscinervis*, Macq., Dipt., Exot.,  
i. 181, (1839).

*Atylotus nigromaculatus*, Ric, A. M. N. H., Mauritius<sup>1</sup>  
(7) vi, 165,<sup>19</sup> (1900), Newst., Ann.  
Trop Med, (1907), 44.

*Tabanus pyrrhus*, Wlk, Dipt. Saunds., Réunion<sup>1</sup>.  
i, 47, tab. ii, 15,<sup>20</sup> (1850); Big, T. A. S.  
B, ix, 264, Wulp. Cat. Dipt. S. Asia,  
60, Coq, Proc. U. S. Mus, xxi, 311<sup>21</sup>,  
Kert., Cat. Dipt., iii, 272.

**diversifrons**, Ricardo.

*Tabanus diversifrons*, Ric., R. I. M., iv, Shillong<sup>1</sup>  
211-5,<sup>1</sup> (1911); Surc., Gen. Ins. Fasc. Khasia, Lower  
175, 66. Ranges<sup>1</sup>  
Buxar Duars<sup>1</sup>  
Sylhet<sup>1</sup>  
Darjiling District.<sup>1</sup>  
[Calcutta].

**eggeri**, Schiner.

*Tabanus eggeri*, Schin., Novara Reise Pers Seistan<sup>3</sup>  
Dipt., 81,<sup>1</sup> (1868); Kert., Cat. Dipt.,  
iii, 239<sup>2</sup>; Ric., R. I. M., iv, 249<sup>3</sup>; Aust., South Europe<sup>2</sup>  
Bull. Ento. Res. x, 294, 301.<sup>5</sup> Asia Minor<sup>2</sup>  
*Tabanus intermedius*, Egg., Verh. zool- Egypt<sup>1, 2</sup>  
bot. Ges. Wien ix, 389, (1859), Palestine<sup>5</sup>  
[nec Wlk. 1850]; Brauer, Denk. Akad.  
Wien, xlii, 182, 42, tab. iii, vi, 42. Gob.,  
Mem. Soc. Linn. N. Fr., (1881), 21, 6;  
Pand., Rev. Entom., ii, 202, 4, Surc.,  
Gen. Ins. Fasc. 175, 72.

**excelsus**, Ricardo.

*Tabanus excelsus*, Ric, A. M. N. H., (8) Mashobra<sup>1</sup>  
xi, 543,<sup>1</sup> (1913), Leese, Ind. Vet. Dept. Mohand (U. P.)<sup>2</sup>  
coll. Notes, 2, tab. iv, 13<sup>2</sup>; S. W., Mem. Dehra Dun<sup>3</sup>  
Dept. Agric. Ind., vii, 104<sup>2</sup>, Surc., Gen. Kangra Dist. (Crosse)  
Ins. Fasc. 175, 67.

**explicatus**, Walker.

*Tabanus explicatus*, Wlk., List Dipt. B. Sikkim<sup>1, 21</sup>  
M., v, 328,<sup>1</sup> (1854); Big., T. A. S. B., Khasia Hills<sup>2</sup>

ix, 264; Wulp. Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 240; Ric., R. I. M., iv, 191<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 67.

### **flavicinctus, Ricardo.**

*Tabanus flavicinctus*, Ric., R. I. M., iv, 191<sup>2</sup>; Kert., Cat. Dipt., iii, 240; Wulp. Cat. Dipt., iii, 240; Kert., Cat. Dipt., iii, 240; Ric., R. I. M., iv, 191<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 67.

### **flavissimus, Ricardo.**

*Tabanus flavissimus*, Ric., R. I. M., iv, 191<sup>2</sup>; Kert., Cat. Dipt., iii, 240; Wulp. Cat. Dipt., iii, 240; Kert., Cat. Dipt., iii, 240; Ric., R. I. M., iv, 191<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 68.

### **flaviventris, Bigot.**

*Alysiotus flaviventris*, Big., Mem. Soc. Zool. Fr., v, 657,<sup>1</sup> (1892).  
*Tabanus flaviventris*, Wulp. Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 242; Ric., R. I. M., iv, 213-4;<sup>2</sup> Surc., Gen. Ins. Fasc. 175, 68.

### **fulvimedius, Walker.**

*Tabanus fulvimedius*, Wlk., List. Dipt. B. M., i, 152,<sup>1</sup> (1848); Kert., Cat. Dipt., iii, 243; Ric., R. I. M., iv, 197<sup>2</sup>; Shiraki, Taiboku Expt. Sin. Bull., (1918), 399-407, tab. x, 14-15,<sup>2</sup>; Austr., Buff. Ent. Res. xii, 451 [Ric. nec Wlk.], Surc., Gen. Ins. Fasc. 175, 69.

*Alysiotus melanopygatus*, Big., Mem. Soc. Zool. Fr., v, 651,<sup>4</sup> (1892).

*Tabanus melanopygatus*, Wulp. Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 260.

*Alysiotus pagodinus*, Big., Mem. Soc. Zool. Fr., v, 654,<sup>3</sup> (1892).

*Tabanus pagodinus*, Wulp. Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 267.

### **fuscicauda, Bigot.**

*Alysiotus fuscicauda*, Big., Mem. Soc. Zool. Fr., v, 658,<sup>1</sup> (1892).

Ceylon<sup>1, 2</sup>  
 Pandaluoya (C

# CATALOGUE OF INDIAN INSECTS

*Tabanus fuscicauda*, Wulp, Cat. Dipt. S. Shewgu (Burma)<sup>1</sup>  
 Asia, 63<sup>2</sup>; Kert., Cat. Dipt. iii, 244; Peradeniya (Ceylon)<sup>3</sup>  
 Ric., R. I. M., iv, 217-8<sup>4</sup>, S. W., Mem. Andaman Islands<sup>5</sup>,<sup>6</sup>  
 Dept. Agric. Ind., vii, 106<sup>4</sup>; Surc.,  
 Gen. Ins. Fasc. 175, 60.

? *Atylotus andamanicus*, Big, Mem. Soc.  
 Zool. Fr., v, 668.<sup>5</sup> (1892).

*Tabanus andamanicus*, Wulp, Cat. Dipt.  
 S. Asia, 63,<sup>5</sup> Kert., Cat. Dipt., iii, 221;  
 Surc., Gen. Ins. Fasc. 175, 60.

Miss Ricardo (m s) has cancelled her  
 Sumatra record.

**fuscicrura**, Bigot.

*Tabanus fuscicrura*, Big., Mem. Soc. Zool. Ceylon<sup>1</sup>,<sup>2</sup>  
 Fr., v, 662,<sup>1</sup> (1892); Surc., Gen. Ins.  
 Fasc. 175, 69<sup>2</sup>.

Not recognized since its original description.

**fuscumaculatus**, Ricardo.

*Tabanus fuscumaculatus*, Ric., R. I. M., Myitkina Dist.  
 iv, 183-4,<sup>1</sup> (1911); S. W., Mem. Dept. (U Burma)<sup>1</sup>  
 Agric. Ind., vii, 106<sup>2</sup>; Surc., Gen. Ins. Sikkim<sup>1</sup>  
 Fasc. 175, 69, subsp. *altermaculatus*, Masuri<sup>2</sup>  
 Ric., A. M. N. H., (8) xi, 544,<sup>1</sup> (1913). Kumaon<sup>2</sup>  
 Manipur<sup>3</sup>

**glaber**, Bigot.

*Tabanus glaber*, Big., Mem. Soc. Zool. Helmand River-(Afgh-  
 Fr., v, 678<sup>1</sup> (1892), Wulp, Cat. Dipt. istan)<sup>1</sup>,<sup>2</sup>  
 S. Asia, 63; Kert., Cat. Dipt., iii, 246; Kashgar<sup>2</sup>  
 Ric., R. I. M., iv, 249-50, tab. xiv, 23;<sup>2</sup> Mesopotamia<sup>3</sup>  
 Patton, I, Jo. Med. Res. vii, 738-9, tab. Persian Seistan<sup>2</sup>  
 lxvii, 2, t. f. 1 (2)<sup>2</sup>, Surc., Gen. Ins.  
 Fasc. 175, 70

**hirtipalpis**, Ricardo

*Tabanus hirtipalpis*, Ric., R. I. M., iv, Bichiakoh (Nepal)<sup>1</sup>  
 129,<sup>1</sup> (1911); Surc., Gen. Ins. Fasc.  
 175, 70.

**hirtistriatus**, Ricardo.

*Tabanus hirtistriatus*, Ric., R. I. M., iv, Dawnat Range (Ter-  
 \* 158-9,<sup>1</sup> (1911); Surc., Gen. Ins. Fasc. action)<sup>1</sup>  
 175, 70.



The Upper Burma record. (S. W., Mem. F. M. S.<sup>1</sup>  
Dept. Agric. Ind. and, 1915) is an error  
in determination.

### **hirtus, Walker**

*Tabanus hirtus*, Wlk., Ins. Samml., i, 52.<sup>1</sup> India<sup>1</sup>  
(1850); Wulp, Cat. Dipt. S. Asia, 60; Phagn (Simla D.)<sup>3</sup>  
Kert., Cat. Dipt. iii, 249; Bog., T.A.S. Naina Tal D.<sup>3</sup>  
B., ix, 264; Gaiger Jo. Trop. Vet. Sci., United Provinces<sup>2</sup>,  
v, 69<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 71.  
*Thurioplectes hirtus*, Ric., R.I.M., iv, [Muktesar (Kumaon  
228-9,<sup>3</sup> (1911)).

### **hybridus, Wiedemann.**

*Tabanus hybridus*, Wd., Anze. Zweif. Burma<sup>1</sup>  
Ins., i, 557.<sup>1</sup> (1828); Wlk., Proc. Linn. Sylhet<sup>1</sup>  
Soc. Lond., i, 110<sup>2</sup>; Wulp, Cat. Dipt. F. M. S.<sup>4</sup>  
S. Asia, 59.<sup>3</sup> Ric., R.I.M., iv, 162<sup>4</sup>,  
*id*, Bull. Ento. Res., vi, 407, Surc., Borneo<sup>3</sup>  
Gen. Ins. Fasc. 175, 71. S. China<sup>1, 2, 3, 5</sup>

### **indianus, Ricardo.**

*Tabanus indianus*, Ric., R.I.M., iv, 175-6.<sup>1</sup> Kodra (N. Kanara)<sup>1</sup>  
(1911); Shiraki, Taihoku Expt. Sta. Goa (Port. India)<sup>1</sup>  
Bull., (1918) 284-94, tab. vi, 1<sup>2</sup>; Ric., [Sanrikoppa (Coorg)  
Bull. Ento. Res., vi, 406<sup>3</sup>; de Mello, Polihetta (Coorg)  
Proc. ivth. Ento. Meetg. Pusa, 41<sup>1</sup>; Makut (Coorg)  
Surc., Gen. Ins. Fasc. 175, 71. Mervara (Coorg)  
Poona ]

? *Tabanus mentitus*, Wlk., List Dipt. Foochow (China)<sup>2</sup>  
B.M., i, 162,<sup>5</sup> (1848); Wulp, Cat. Dipt. Formosa<sup>1, 2</sup>  
S. Asia, 59. Hong Kong<sup>2</sup>

### **indiscriminatus, Ricardo.**

*Tabanus indiscriminatus*, Ric., Arch. Ceylon<sup>1</sup>  
Naturgesch. lxxx, (A8) 123,<sup>1</sup> (1915).

### **joidus, Bigot.**

*Atylotus joidus*, Big., Mem. Soc. Zool. Fr., Sibsagar (Assam)<sup>2</sup>  
v, 657,<sup>1</sup> (1892).

*Tabanus joidus*, Wulp, Cat. Dipt. S. Asia,  
63; Kert., Cat. Dipt., iii, 252; Ric.,  
R.I.M., iv, 211-2<sup>2</sup>; Surc., Gen. Ins.  
Fasc. 175, 72.

**jucundus**, Walker.

- Tabanus jucundus*, Wlk. List Dipt. B.M., Pondicherry (Ceylon),<sup>2</sup>  
 i, 187,<sup>1</sup> (1848); Wulp. Cat. Dipt. S. Kohat N. W. F. P.<sup>2</sup>  
 Asia, 60; Ric., R.I.M., iv, 164 5. tab. Masuri<sup>3, 4</sup>  
 xiii, 10<sup>3</sup>, *id.*, Bull. Ento. Res., vi, Igatpuri<sup>2</sup>  
 407<sup>4</sup>; C. Vet. Dept. Mem. ii, tab iv, (W. Ghats)  
 12<sup>5</sup>; Fletcher & S.W. Proc. ivth. Ento. Mohand (U. P.)<sup>1</sup>  
 Meetg. Pusa, 226; S. W. Mem. Dept. — — — — —  
 Agric. Ind., vii, 105<sup>6</sup>; Surr., Gen. Ins. Hong Kong<sup>1, 4</sup>  
 Fasc. 175, 72.

**kakhyenensis**, Senior White.

- Tabanus kakhyenensis*, S. W., Mem. Dept. Mohnyin<sup>1</sup>  
 Agric. Ind., vii, 113, tab. xii,<sup>1</sup> (1922), N. Toungoo<sup>1</sup>  
 104, [note]. Pymmana<sup>1</sup>  
 (all U. Burma)

**khasiensis**, Ricardo.

- Tabanus khasiensis*, Ric., A.M.N.H., (8) Khasia Hills<sup>1, 2</sup>  
 iii, 487,<sup>1</sup> (1909); *id.*, R.I.M., iv 193-4<sup>2</sup>, Meerut<sup>2</sup>  
 Surr., Gen. Ins. Fasc. 175, 72  
 — — — — —  
 Simabanz (Siam)  
 Penang  
 (B. M. colln.)

**leleani**, Austen.

- Tabanus leleani*, Aust. Bull. Ento. Res., Kangra Valley<sup>1, 2</sup>  
 x, 312-6, figs 13, 14,<sup>1</sup> (1920); Surr., [Seistan]  
 Gen. Ins. Fasc. 175, 73; *id.*, Ann. Soc. Quetta  
 Ent. Fr., xci, 238, [bionomics], Aust., Attock  
 Bull. Ento. Res., xiii, 287<sup>2</sup>; *id.*, loc. Near Srinagar (Kashmir)  
*cit.*, xvi, 17.  
 — — — — —  
 Algeria to Mesopotamia<sup>1, 2</sup>

**leucocnematus**, Bigot.

- Atylotus leucocnematus*, Big., Mem. Soc. India<sup>1, 2</sup>  
 Zool. Fr., v, 656,<sup>1</sup> (1892).  
*Tabanus leucocnematus*, Wulp. Cat. Dipt. Lushai Hills<sup>3</sup>  
 S. Asia, 63,<sup>2</sup> [*leucocnematus*, laps.], Khasia Hills<sup>3</sup>  
 Kert., Cat. Dipt., iii, 254; Ric., R.I.M., Coomaor<sup>1</sup>  
 iv, 131-2<sup>3</sup>; Patton, I. Jo. Med. Res., Katha (U. Burma)  
 x, 67<sup>4</sup>; S. W., Mem. Dept. Agric. Ind., [Darjiling]  
 vii, 104<sup>5</sup>; Surr., Gen. Ins. Fasc. 175,  
 73.

**eucohirtus, Ricardo.**

- Tabanus eucohirtus*, Ric., A.M.N.H., (2) Kolar 3346, 33  
iii, 488,<sup>1</sup> (1909); *id.*, R.I.M., iv, 298-99,<sup>2</sup>  
Sarc., Gen. Ins. Fasc. 175, 74

**eucopogon, Bigot.**

- Allylotus eucopogon*, Big., Mem. Soc. Scienc<sup>1</sup>, \*  
Zool. Fr., v, 651,<sup>1</sup> (1892).  
*Tabanus laevis-jugor*, Wulp. Cat. Dipt.  
S. Asia, 63. Kerr, Cat. Dipt. iii, 254,  
Ric., R.I.M., iv, 184, tab. xiv, 102.  
Sarc., Gen. Ins. Fasc. 175, 73.

**macer, Bigot.**

- Allylotus macer*, Big., Mem. Soc. Zool. Fr. India<sup>1</sup>  
v, 619,<sup>1</sup> (1892), [ ♀ only ]. Indum Dhr<sup>2</sup>  
*Tabanus macer*, Wulp. Cat. Dipt. S. Asia, Pusa<sup>3</sup>,<sup>4</sup>  
62; Ric., R.I.M., iv, 223; Assoc. Trans. Com (Part. Indus)  
R.S.T.M. & H., xv, 251,<sup>2</sup> [ *id.*, R.I.M. Mohamed (U. P.),<sup>5</sup>  
(B) x, 143 ]; Isaac, Mem. Dept. Agric.  
Ind., ix, (2) 21, tab. v, 1, 6, vi, 1, ta,  
vii, 1, viii, 1a-d, [ bionomics ].

- Tabanus incallosus*, Ric., A.M.N.H., (8) Trichinopoly<sup>7</sup>  
iii, 489-90,<sup>3</sup> (1909); *id.*, R.I.M., iv, Pathankot (Hissar)  
129-30,<sup>4</sup> (1911); Part. & Cragg, T.B. [Murree  
Med. Ent., 295, [ feeding point ], 297, Katlgolana  
[ oviposition ], tab. xlii, 1-6; Fletcher, Dogan  
Pusa Sci. Repts., (1916-17), 36, [ ovi- Rawalpindi  
position ]; Patel, *loc. cit.*, (1919-20), Chamba State (Pa  
97, [ do ]; Fletcher, *loc. cit.*, (1920-21), Nagpur  
47, 48, [ parasites ]; de Mello, Proc. Dharwar  
ivth, Ento. Meetg. Pusa, 41,<sup>5</sup> [?]; C. Coimbatore  
Vet. Dept. Mem. ii, 4, tab. i, 2<sup>6</sup>, Taliparamba (N  
Fletcher & S. W., Proc. ivth, Ento. bar)  
Meetg. Pusa, 226; Sarc., Gen. Ins. In train between  
Fasc. 175, 62 eswarum and Ma
- Tabanus trichinopolis*, Ric., A.M.N.H.,  
(8) xiv, 359-60,<sup>7</sup> (1914).

**manipurensis, Ricardo.**

- Tabanus manipurensis*, Ric., A.M.N.H., Manipur<sup>1</sup>  
(8) xi, 514,<sup>1</sup> (1913), Sarc., Gen. Ins.  
Fasc. 175, 75.

**melanognathus, Bigot.**

- Atylotus melanognathus*, Big. Nouv. Arch. Parneuh (N. Bergal)<sup>3</sup>  
 Mus. H.N. Paris, (3) ii, 294.<sup>1</sup> (1890)  
*Tabanus melanognathus*, Wulp. Cat. Dipt. Laos (Siam)<sup>1, 2</sup>  
 S. Asia, 62; Ric., R.I.M., iv, 226<sup>2</sup>.  
*Tabanus nemeptatus*, Ric., R.I.M., iv,  
 140-1,<sup>3</sup> (1911), Sure., Gen. Ins. Fasc.  
 175, 77

**monotaeniatus, Bigot.**

- Atylotus monotaeniatus*, Big., Mem. Soc. India<sup>1, 2</sup>.  
 Zool. Fr., v, 655,<sup>1</sup> (1892).  
*Tabanus monotaeniatus*, Wulp. Cat. Dipt. N. Khasia Hill.<sup>3</sup>  
 S. Asia, 63<sup>2</sup>, Kert., Cat. Dipt., iii, 262; Nongpoh (Khasia)<sup>3</sup>  
 Ric., R.I.M., iv, 159-60<sup>3</sup>; *id.*, *loc. cit.*, Sibsagar (Assam)<sup>2</sup>  
 iv, 101<sup>1</sup>, S. W. Mem. Dept. Agric. Yunnan<sup>4</sup>  
 Ind., vii, 105<sup>3</sup>, Sure., Gen. Ins. Fasc. Mohnyin (U. Burma)<sup>4</sup>  
 175, 76

**nemocallosus, Ricardo**

- Tabanus nemocallosus*, Ric., A.M.N.H., Pusa<sup>1, 2</sup>.  
 (8) iii, 490,<sup>1</sup> (1909); *id.*, R.I.M., iv, Jhelum Dist.<sup>3</sup>  
 137<sup>2</sup>; Fletcher, Pusa Sci. Repts.,  
 (1915-16), 79, [bionomics]; *id.*, *loc.*  
*cit.*, (1916-17), 97, [do]; Patel, *loc.*  
*cit.*, (1919-20), 97, [notes]; Aust.,  
 Trans. R.S.T.M. & H., xv, 264, [abs.  
 R.A.E. (B), x, 113], Sure., Gen. Ins.  
 Fasc. 175, 76; Isaac, Mem. Dept. Agric.  
 Ind., ix (2), 24, tab. v, 5, vi, 6, 6a, vii, 6,  
 x, 6a-e, [bionomics].

**nephodes, Bigot.**

- Atylotus nephodes*, Big., Mem. Soc. Zool. Naga Hills<sup>1</sup>  
 Fr., v, 656,<sup>1</sup> (1892) Sibsagar (Assam)<sup>1</sup>  
*Tabanus nephodes*, Wulp. Cat. Dipt. S.  
 Asia, 63; Kert., Cat. Dipt., iii, 264;  
 Ric., R.I.M., iv, 145-6, Sure., Gen. Ins.  
 Fasc. 175, 77.  
*Tabanus salvazai*, Sure. Bull. Soc. Ent.  
 Fr. (1921) (19) 286, (Dec. 1921 or Jan. 1922), [var].

**nicobarensis**, Schiner

*Tabanus nicobarensis*, Schin., Novus: Nicobar Islands<sup>1, 2</sup>,  
 Rense Dipt., 81.<sup>1</sup> (1866); Wulp. Cat.  
 Dipt. S. Asia, 61; Kert. Cat. Dipt.,  
 iii, 261; Ric., R.I.M. iv, 191-2<sup>1</sup>, Surc.  
 Gen. Ins. Fasc. 175, 77.

**nigropictus**, Macquart

*Tabanus nigropictus*, Macq., Dipt. Exot., Italia<sup>1, 2</sup>,  
 suppl. v, 24.<sup>1</sup> (1835); Wulp. Cat. Dipt.  
 S. Asia, 60; Kert. Cat. Dipt., iii, 265;  
 Big., T.A.S.B., ix, 261; Ric., R.I.M.,  
 iv, 210-11<sup>2</sup>; Surc., Gen. Ins. Fasc.  
 175, 77.

[Not recognized since original description. Type probably lost by Ric.]

**obconicus**, Walker.

*Tabanus obconicus*, Wlk., Dipt. Saund., Central India<sup>1</sup>,  
 i, 54<sup>1</sup> (1850); Wulp. Cat. Dipt. S. Asia, Bombay<sup>2</sup>,  
 60; Kert., Cat. Dipt. iii, 266; Big., Belgaum (Bengal)<sup>2</sup>,  
 T.A.S.B., ix, 261; Ric., R.I.M., iv,  
 215-6<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 77.

**optatus**, Walker.

*Tabanus optatus*, Wlk., Proc. Linn. Soc. Bengal<sup>1</sup>; Bengal<sup>2</sup>,  
 Lond. i, 111, 33.<sup>1</sup> (1856); Wulp. Cat.  
 Dipt. S. Asia, 61<sup>2</sup>; Ric., R.I.M., iv,  
 139<sup>2</sup>; Pratt, Jo. Trop. Vet. Sci., 296-4.<sup>2</sup>  
 [F. M. S. distribution]; Edw., Jo. F. M. S.<sup>2</sup>  
 F. M. S. Mus., viii, 27<sup>2</sup>; Surc., Gen. Ins. Fasc. 175, 78.  
 Sumatra<sup>2, 3, 7</sup>,  
 Borneo<sup>1, 2, 3</sup>.

*Tabanus alboscutatus*, Rond. Ann. Mus.  
 Civ. Genoa, vii, 156.<sup>4</sup> (1875).

*Tabanus equestris*, Wulp., Leyden Mus.  
 Notes, vii, 77, 31, tab. v, 6, (1845).

**orientis**, Walker.

*Tabanus orientis*, Wlk., List Dipt. B. M., Nepal<sup>1, 2</sup>,  
 i, 152.<sup>1</sup> (1848); Wulp. Cat. Dipt. S. United Provinces<sup>2</sup>,  
 Asia, 60; Kert. Cat. Dipt., iii, 267; Naini Tal<sup>2</sup>,  
 Big., T.A.S.B., ix, 261<sup>2</sup>; Ric., R.I.M., Thandani (Himalaya),  
 iv, 195-7<sup>2</sup>; Baldrey, Jo. Trop. Vet. W. Blunt<sup>2</sup>,  
 Sci., vi, 271-282<sup>4</sup> [surra transmission Masati<sup>2</sup>,  
 expets.]; C. Vet. Dept. Memo. ii, tab. Dongayalli (Murree)<sup>2</sup>

in, 18<sup>5</sup>, Fletcher & S. W. Poole, Arch. Yunnan<sup>2</sup>  
Ento Meetg. Pusa, 226; Sarc. Gen. Ins. Muktesar<sup>2</sup>  
Fasc. 175, 78; Ric., R. I. M., iv, 101.<sup>2</sup> Mohanp<sup>5</sup>  
*Tabanus consocius*, Wlk., Dipt. Saunde, Sukhim<sup>6</sup>  
i, 56. (1850); Big. T. A. S. B., ix, 261, Jhelum Dist.<sup>7</sup>  
Wulp. Cat. Dipt. S. Asia, 60; Kert., Kangra Dist. (Crosse)  
Cat. Dipt. iii, 226; Guge, Jo. Trop. [Dalhousie]  
Vert. Sci., v, 69; Aust., Trans. R. S. T.  
M. & H., v, 231,\* [above R. A. H. (5)  
x, 123]

*Tabanus perlinus*, Wlk., Dipt. Saunde,  
i 56. (1850) Big. T. A. S. B., ix, 261;  
Wulp. Cat. Dipt. S. Asia, 60; Kert.,  
Cat. Dipt. iii, 228

The Burmese locality, (S. W. Mem. Dept.  
Agric. Ind., vii, 106), is an error in  
determination.

**oxyceratus, Bigot.**

*Atylotus oxyceratus*, Big., Mem. Soc. Zool. India<sup>1</sup>  
Fr., v, 652,<sup>1</sup> (1892).

*Tabanus oxyceratus*, Wulp. Cat. Dipt. S. China, Fowet (Hupa-  
Asia, 63; Kert., Cat. Dipt. iii, 267; larva)<sup>2</sup>  
Ric., R. I. M., iv, 195<sup>2</sup>; S. W. Mem. N. Chin Hill-<sup>2</sup>  
Dept. Agric. Ind., vii, 106<sup>3</sup>; Sarc., Gen. Masauri<sup>2, 2</sup>  
Ins. Fasc. 175, 78

**provincialis, Ricardo.**

*Tabanus provincialis*, Ric., A. M. N. H., Arun Kava (Travan-  
(5) xi, 515,<sup>1</sup> (1913); Sarc., Gen. Ins. core)<sup>1</sup>  
Fasc. 175, 80 Kurzeong<sup>1</sup>

**pulchellus, Loew.**

*Tabanus pulchellus*, Lw., Verh. zool-bot. Seistan<sup>1</sup>  
Ges. Wien, viii, 597, 26,<sup>1</sup> (1858) Brau-  
er, Denk. Akad. Wien, xlii, 203, 60, Mesopotamia<sup>1, 3</sup>  
Kert., Cat. Dipt. iii, 271<sup>2</sup>; Ric., A. M. Asia Minor<sup>2</sup>  
N. H., (7) xvi, 200, Patton, I. Jo. Med. N. Africa<sup>2</sup>  
Res., vii, 736 S. tab. lxxv, 1, and fig. Cyprus<sup>1</sup>  
1 (1).<sup>2</sup> [probably local race of *detrac- Perso-Afghan Front or<sup>2</sup>*  
*iatus* Macq.]; Sarc., Gen. Ins. Fasc.  
175, 80

*Tabanus cypricus*, Ric., R. I. M., iv,  
218-9,<sup>1</sup> (1911).

*Tabanus paterifer*, Wlk., List Dipt. B.

M., v, suppl. 1, 296<sup>1</sup> (1891); Sur., Ben. Ins.

Ins. Fasc. 175, 80.

*Tabanus pater*, Ric. R. I. M., iv, 271: 2

tab. xiv, 21<sup>2</sup> (1911); Parton, I. Jo.

Med. Res. vii, 740, fig. 144<sup>2</sup>.

**paterus, Ricardo.**

*Tabanus paterus*, Ric., R. I. M., iv, 165.

6, tab. viii, 11<sup>2</sup> (1911); Sur., Ben. Ins.

Fasc. 175, 81.

Tumman Dist.<sup>2</sup>

Cochin<sup>1</sup>

Bombay N. C. P.

(1891) (1911).

**rubicundus, Macquart.**

*Tabanus rubicundus*, Macq., Dipt. Exot.

suppl. i, 32<sup>1</sup> (1834); *id.*, loc. cit., suppl.

iii, 170, *id.*, loc. cit., v, 27<sup>2</sup>; Part., T. A.

S. B. ix, 264; Wulp., Cat. Dipt. S. A. a.

59; Kert., Cat. Dipt., iii, 271; Ric.

R. I. M., iv, 172; Cat. sin. 12<sup>2</sup>; W.

Mem. Dipt. Yucc. Ind., vii, 195<sup>1</sup>.

[<sup>2</sup> *monilifer* a good sp.], Sur., Gen.

Ins. Fasc. 175, 81.

Indo<sup>2</sup>

C. randa Velloz (8

S. Ind.)

Khasia Hills<sup>2</sup>,<sup>6</sup>

Patna Kaila (U.

Bihar)<sup>4</sup>

Schwager (Assam)<sup>6</sup>

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*Tabanus intermedius*, Wlk., List Dipt. B. M.

i, 161. (1848)<sup>2</sup>; Wulp., Cat. Dipt. S.

Asia, 60; Kert., Cat. Dipt., iii, 252.

*Atylotus monilifer*, Btl., Mem. Soc. Zool.

Fr., v, 651.<sup>2</sup> (1862).

*Tabanus monilifer*, Wulp., Cat. Dipt. S.

Asia, 63; Kert., Cat. Dipt., iii, 262.

Java<sup>2</sup>

**rubidus, Wiedemann.**

*Tabanus rubidus* Wied., Dipt. Exot.

69,<sup>1</sup> (1821); *id.*, Ausser. Zool. Hist. In.

i, 127-8, Big., T. A. S. B. ix, 264;

Wulp., Leyden Mus. Notes, vii, 71-23<sup>2</sup>;

*id.*, Cat. Dipt. S. Asia, 59<sup>3</sup>; Kert., Cat.

Dipt., iii, 274; Ric., R. I. M., iv, 165-6<sup>1</sup>;

*id.*, Bull. Ent. Res., vi, 105<sup>5</sup>; Gaiger,

Jo. Trop. Vet. Sci., v, 69, [1 sp.];

Lefroy, Pusa Bull. 7, 21,<sup>6</sup> [? sp.];

d'Abreu, Proc. Ind. Ent. Meetg. Pusa,

iii, 866, [eaten by birds]; Aust., Bull.

Ent. Res. xii, 448.<sup>7</sup> [*priscus* Wlk. and

Bengal<sup>1</sup>,<sup>2</sup>,<sup>4</sup>

Moulmein<sup>1</sup>

Bombay<sup>1</sup>,<sup>4</sup>,<sup>7</sup>

Pusa<sup>1</sup>,

Sib-sagar (Assam)<sup>4</sup>

Khasia Hills<sup>4</sup>

Partabgarh (U. P.)<sup>1</sup>

Nepal<sup>7</sup>,<sup>8</sup>

East India<sup>15</sup>,<sup>16</sup>

Trincom Dist. (Ceylon)

Umballa<sup>9</sup>

Calcutta<sup>9</sup>

- virgatulus* Aust. possibly only forms : Muktasar<sup>11</sup>  
 Sure., Gen. Ins. Fasc. 175, 82 : Isaac, Mattaran  
 Mem. Dept. Agric. Ind., ix (2) 22, tab. (W. 141, 142) : 18  
 v, 2, 2a, 3, vi, 2, 2a, vii, 2, viii, 2a-c, (Gos (Port Ind) )<sup>12</sup>  
 [biometrics] ; *id.*, *loc. cit.*, viii, 93, tab. Jhelum Dist<sup>13</sup>  
 xi, [larva]. Ma-ari<sup>14</sup>
- tabanus albimectus*, Wlk., Dipt. Saundls., Dharamsala (Crown)  
 i, 48<sup>8</sup> (1850), Fig., T. A. S. B., ix, 264 : Kangra (Crown)  
 Wulp., Cat. Dipt. S. Asia, 60, Kort. D. Ghazipur (Crown)  
 Cat. Dipt., iii, 219, Ric., R. I. M., iv, [Hopm (Upper Burma)]  
 156-7, tab. xiii, 8<sup>9</sup> ; Burm., Spol. Zeyl. Chapra (Bihar)  
 vi, 170,<sup>10</sup> Baldrey, Jo. Trop. Vet. Sci., Buxar (Bihar)  
 vi, 271-82,<sup>11</sup> [transmission expts., f. Coimbatore  
 sp.] : Cragg, I. Jo. Med. Res., vii, Rawalpindi  
 618-63, tabs. lxi-lxiii, [intestine], Tarn, near Peshawar  
 Cornwall & Patton, *loc. cit.*, ii, 569-66, Giridih  
 [salivary secretion] : Ric., Bull. Ent. Khumbak, Khurda  
 Res., vi, 405<sup>12</sup> ; Howlett, Ind. Ins. Life, Khau Hliba  
 tab. lxii, 1-1c, [life history], *id.*, Pusa Bareilly  
 Sci. Repts., (1909-10), 71, Fletcher, Mdnajour  
*loc. cit.*, (1915-16), 80, [biometrics], Kasanur  
 82, [surra], *id.*, *loc. cit.*, (1916-17), Nongphoh (Assam)  
 96, [oviposition] ; Patel, *loc. cit.*, Mombum  
 (1919-20), [parasites] ; Fletcher, *loc. cit.*, Delhi  
*loc. cit.*, (1920-21), 47-48, [do] ; Path. & Cuttack  
 Cragg, T. B. Med. Ent., tab. ii, 7, Dera Ismail Khan  
 [antenna], xiv, 2, [thorax], xv, 4, Dumraon (Bihar)  
 [medifurca], xviii, 5, [genitalia], Kasargod (K. Kalaru)  
 xxvii, 9, [salivary gland], 288-9, 291, ...  
 [feeding point] 297, [oviposition] : ' ? Asia '<sup>15</sup>  
 Longstaff, 'Butterfly Hunting,' 393<sup>16</sup> ; Java<sup>5</sup>, 18, 20  
 de Mello, Proc. 19th. Ento. Meetg., Sumatra<sup>4</sup>, 2  
 Pusa, 41<sup>17</sup> ; Aust., Trans. R.S.T.M. & F.M.S.<sup>1</sup>, 7, 21  
 H., xv, 261,<sup>18</sup> [obs. R. A. E. 18) x, Sam<sup>1</sup>, 7  
 113] ; S. W., Mem. Dept. Agric. Ind., Hong Kong<sup>3</sup>, 7-12  
 vii, 105<sup>19</sup> ; Sure., Gen. Ins. Fasc. 175, Cocham China<sup>7</sup>  
 59. Annam<sup>7</sup>
- Tabanus calidus*, Wlk., Dipt. Saundls., i, 57,<sup>17</sup> (1850) ; Wulp., Cat. Dipt. S. Asia, 60.
- tylotus lachrymans*, Big., Mem. Soc. Zool. Fr., v, 669,<sup>18</sup> (1892).



*Tabanus fulvipes* Wulp. Cat. Dipt. S. Asia, 63.

*Tabanus fulvipes*, Wlk., Cat. Dipt. B. M., i, 17<sup>1</sup> (1850); Wulp., Cat. Dipt. S. Asia, 63; Wulp., Cat. Dipt. S. Asia, 63.

*Tabanus fulvipes*, V.L., Dipt. Scandin., i, 54 (1850); Wulp., Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 277.

*Tabanus fulvipes*, V.L., Dipt. Scandin., i, 54 (1850); Wulp., Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 277; Rie., R. I. M., iv, 194-5<sup>14</sup>; Shiraki, Taihoku Expt. Sta. Bull. (1918), 343-76 (tab. vii, 6<sup>11</sup>); Rie., Bull. Ent. Res., vi, 405<sup>15</sup>; Fletcher, Penn. Sta. Repts.,

#### *rufiventris*, Fabricius

*Tabanus rufiventris*, Fabricius, Syst. Arth., iii, 1 (1794); Wulp., Cat. Dipt. S. Asia, 63; Wulp., Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 277; Rie., R. I. M., iv, 194-5<sup>14</sup>.

*Alphitoe rufiventris*, Big. Mem. Soc. Zool. Fr., v, 553-5 (1892); Kert., Cat. Dipt., iii, 277.

*Tabanus rufiventris*, Big. Mem. Soc. Zool. Fr., v, 553-5 (1892); Wulp., Cat. Dipt. S. Asia, 63; Kert., Cat. Dipt., iii, 277; Rie., R. I. M., iv, 194-5<sup>14</sup>; Shiraki, Taihoku Expt. Sta. Bull. (1918), 343-76 (tab. vii, 6<sup>11</sup>); Rie., Bull. Ent. Res., vi, 405<sup>15</sup>; Fletcher, Penn. Sta. Repts., (1929-30) 57<sup>2</sup>; Fletcher, Penn. Sta. Repts., Gen. Inv. Fa., 173, 64; Fletcher, Mem. Dept. Agric. Ind., viii, 62, tab. viii, 1 ♀ recognized.

*Tabanus sanguineus* Wlk., Dipt. Scandin., i, 54<sup>11</sup> (1850); Wulp., Cat. Dipt. S. Asia, 60<sup>12</sup>; Kert., Cat. Dipt., iii, 277; Rie., R. I. M., iv, 194-5<sup>14</sup>; Shiraki, Taihoku Expt. Sta. Bull. (1918), 343-76 (tab. vii, 6<sup>11</sup>); Rie., Bull. Ent. Res., vi, 405<sup>15</sup>; Fletcher, Penn. Sta. Repts.,

(1915-16), 80, Patel, *loc. cit.* (1919-20).

97, [ parasites ]; Sure, Gen. Ins. Fasc.

175, 83

**sexcinctus, Ricardo**

*Tabanus sexcinctus*, Ric., R. I. M., iv, Lushai Hills<sup>1</sup>  
133,<sup>1</sup> (1911). Shuraki, Taihoku Expt. Masumi<sup>3</sup> [ ? sub-form ]  
Sta. Bull., (1918) 231-10, tab. v 2<sup>3</sup>,  
S. W., Mem. Dept. Agric. Ind. vii,  
104<sup>3</sup> Sure, Gen. Ins. Fasc. 175, 83 Formosa<sup>2</sup>

**speciosus, Ricardo**

*Tabanus speciosus*, Ric., R. I. M., iv, Travancore<sup>1</sup>  
157-8,<sup>1</sup> (1911). Patton & Cragg, T. B. Trinco Dist.<sup>1</sup> (Ceylon)  
Med. Ent. 289, tab. xl. 294, [ feeding Madras (B. M. coll.)  
point ], 297, [ oviposition ]; Sure, Gen. [ Hazaribagh (Bihar)  
Ins., Fasc. 175, 81. Angul  
Bombay  
Cuddalore (Madras Pres.)  
Chapra  
Khurda  
Santikoppa (N. Cong.)  
Combarote  
Dumraon  
Buxar  
Bhagalpur.

**striatus, Fabricius**

*Tabanus striatus*, Fb., Syst. Ent., iv. 371,<sup>1</sup> Kohat<sup>2</sup>  
(1794); *id.*, Syst. Antl., 103, Aust., Jhelum D.<sup>2</sup>  
Bull. Ent., Res., xii, 415<sup>2</sup>, *id.*, Trans. E. India<sup>1, 2</sup>  
R. S. T. M. & H., xv, 264; Isaac, Mem. Pusa<sup>6</sup>  
Dept. Agric. Ind., viii, 97-109, tabs. Punjab<sup>6</sup>  
xix-xv, [ bionomics, larval structure, Bombay<sup>6</sup>  
adult genitalia ] [ Hissar (Punjab)  
*Tabanus hilaris*, Wlk., Dipt. Saunds i, Belgachia (Bengal)  
49 tab. ii. 3,<sup>1</sup> (1850), Big., T. A. S. B., Midnapur  
ix, 264, Wulp. Cat. Dipt. S. Asia, 60<sup>2</sup>, Angul  
Kert., Cat. Dipt., iii, 249, Ric., R. I. M. Monghyr  
iv, 153<sup>6</sup>, *id.*, Bull. Ent. Res., vi, 407<sup>7</sup>, Rawalpindi  
Patt. & Cragg, T. B. Med. Ent. 294, Lahore  
[ feeding point ], 297 [ oviposition ], Bhagalpur  
Patt., Arch. f. Prolist., xv, 333-62, Suri  
[ *Cnethidia tabani* ], Fletcher, Pusa Cuttack  
Sci. Repts., (1915-16), 80; Patel, *loc.* Dahongyan (Bihar)

- cat.*, (1919-20), 97; *Surc. Gen. Ins.* Darjiling  
Fasc. 175, 70 Bardwan
- Tabanus partitus*, Wlk., *Proc. Linn. Soc.* Poochra  
Lond., 1. 9.<sup>e</sup> (1856) Wulp. Cat. Dipt. Ludhiana (Punjab)  
S. Asia, 60; Letroy-Pusa Bull. 7. 21<sup>a</sup>, Katlagola  
Fraser Jo. Trop. Vet. Sci. iv, 373, 375, Coimbatore.]  
381-2 [infection expts., (sp.)], Pratt  
*loc. cit.*, v, 390-4,<sup>10</sup> [F. M. S. distribu-  
tion]. Gaiger, *loc. cit.*, v. 69.
- Tabanus rufocollis*, Big., *Mem. Soc.*  
Zool. Fr., v. 679<sup>11</sup> (1892), Wulp. Cat.  
Dipt. S. Asia, 63.
- subcallosus, Ricardo.**
- Theriophytes subcallosus*, Ric., R. I. M., Masuri<sup>1</sup>  
iv, 227-8,<sup>1</sup> (1911). Dalhousie<sup>1</sup>
- Tabanus subcallosus*, Baldrey, Jo. Trop. Muktesar<sup>2</sup>  
Vet. Sci., vi. 271-282,<sup>2</sup> [transmission  
expts.]; *Surc. Gen. Ins.* Fasc. 175,  
85 [Dogaon  
Moerut  
Muzaffargarh  
Dera Dun (U. P.)  
Pokokla (Burma)  
Dalhousie  
Dumera hills (Gurdaspur  
District)  
Kangra (Punjab)  
Amparad (near Muktesar).]
- subcinerascens, Ricardo.**
- Tabanus subcinerascens*, Ric., R. I. M., N. Chin Hills<sup>1</sup>  
iv, 215,<sup>1</sup> (1911); *Surc., Gen. Ins.* Fasc.  
175, 85.
- subhirtus, Ricardo.**
- Tabanus subhirtus*, Ric., R. I. M., iv, Bengal<sup>1</sup>.  
219,<sup>1</sup> (1911); *Surc., Gen. Ins.* Fasc. Bombay<sup>1</sup>  
175, 85.
- Atylotus cinerascens*, Big., *Mem. Soc.* Java<sup>2</sup>  
Zool. Fr., v, 669,<sup>2</sup> (1892), [see King  
1827].
- Tabanus cinerascens*, Wulp. Cat. Dipt. S.  
Asia, 63; Kert., Cat. Dipt., iii, 231.

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s, Jaennicke.

*Tabanus sufis*, Jaenn , Abhandl Senck. Punjab (B. M. Colln.)  
 Naturf. Ges., vi, 332. 24,<sup>1</sup> (1867); ————  
 Verral, Br. Flies, v, 9 syst list app.) N. Africa<sup>1</sup> \*.  
 11.<sup>2</sup> E. Africa<sup>2</sup>

*Tabanus alboventralis*, News.

*ebrosus*, Walker.

*Tabanus tenebrosus*, Wlk. List Dipt B. Kanara<sup>1</sup>,<sup>2</sup>  
 M., v, supp. i, 242, 389,<sup>1</sup> (1854); Big.,  
 T. A. S. B., lx, 264; Wulp, Cat. Dipt.  
 S. Asia, 60. Kert., Cat. Dipt., iii, 285,  
 Ric., R. I. M., iv, 203-4,<sup>2</sup> Sure, Gen.  
 Ins. Fasc. 175, 86.

Not recognized since original description. Type redescribed by  
 Ricardo].

ens, Walker.

*Tabanus lenens*, Wlk, Dipt Saunds, 1, E. India<sup>1</sup>  
 49,<sup>1</sup> (1850), Wulp, Cat Dipt S. Asia, Ceylon-general<sup>2</sup>,<sup>8</sup>  
 60; Gaiger, Jo. Trop. Vet Sci, v, 69; Bassein<sup>3</sup>,<sup>8</sup>,<sup>9</sup> (Bomb  
 Aust, Bull. Ent. Res., xii, 445,<sup>2</sup> [ syno Madras<sup>2</sup>  
 nomy ] Big., T A. S. B., lx, 264, Pusa<sup>3</sup>  
 Kert., Cat Dipt, iii, 285; Lefroy, Pusa Bengal-general<sup>8</sup>,<sup>12</sup>  
 Bull. 7, 21<sup>3</sup>; Isaac, Mem. Dept. Agric. Burma<sup>8</sup>  
 Ind., vin. 97, tabs xii-xiv, [ larval Gonda D (U P )<sup>8</sup>  
 structure ]; *id.*, *loc.*, *cat*, ix, 23, tab. v, E. Coast<sup>8</sup>,<sup>12</sup>  
 4, vi, 4, 4a, vii, 4, ix, 4a-e, [ bionomics ] Sylhet<sup>8</sup>  
 ? *Tabanus chinensis*, Thun., N. Acta R. S. Manipur<sup>8</sup>  
 Upsala, ix, 53, 62, (1827); Bezzi, Wien. Mohmand Pass (N.  
 Ent. Zeit., xxvii, vols. ii & iii, (1908) F P )<sup>8</sup>  
 ? *Tabanus costalis*, Licht, Cat. 213. Ham- S India-general<sup>10</sup>  
 burg, (1796); Aust., A. M. N. H., (8), Goa (Port Ind )<sup>11</sup>  
 1, 346 Dehra Dun<sup>13</sup>  
*Tabanus dorsilinea*, Wd, Anal. Ent., 22, [Kasargod:  
 10, (1824); *id.*, Ausser. Zweifl Ins, i, (S. Kanara)  
 184, 10, Big., T A S. B., lx, 261, Combatore  
 [ *dorsolineae*, laps ]. Benkampur  
 ? *Tabanus manilensis*, Schin, Novara —————  
 Reise Dipt, 84, (1868)<sup>15</sup>; Wulp, Cat. Java<sup>4</sup>,<sup>6</sup>  
 Dipt. S. Asia, 61. Sumatra<sup>5</sup>,<sup>6</sup>

*Tabanus megalops*, Wlk., List. Dipt., R. I. M., v, p. 8.  
v, suppl. i, 217, (1854), [Walsb., v, p. 177, (1854)].  
Dipt. S. Asia, 60.

*Tabanus strabus* Wd. (see Pl.) 1811.  
Exot., 79, ed., Auser. Zoon. Ind., i, 155.  
Wulp. Dipt. Sumat. R. I. M., Dec. 1854.  
id., Leyden Mus. Notes, vii, 619; 62.  
Cat. Dipt. S. Asia, 587; Kerr., Cat. Dipt., iii, 281.  
R. I. M., v, 139, 153.  
Gölgert, Jour. Comp. Vet. Sci., v, 69.  
Petrus. Ind. I. S. Ind., i, 2, 3.  
Howell. Ind. I. S. Ind., i, 2, 3.  
Mitsunaka, Bull. Zool. Phil. Vet. Dept., [abs. T. Vet. Bull., i, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000].  
(18) viii, 239, *id.*, *ib.*, viii, 197, 234.  
tab. 1-4, [life history]; Fletcher, S. Ind. I. S., Ind. I. S., v, 139, 153.  
Patton & Craig, T. B. Med. Ent., 256, 257, [feeding point]; 257, [oviposition]; Fletcher, Pusa Sci. Repts. (1915-16), 79, [no. of broods?]; [Curra] de Mello, Proc. Ind. Ent. Soc. Pusa, 1911, Dover, R. I. M., xiii, 39412; S. W. Mem. Dep. Agric. Ind., vii, 10312, Sur. Gen. Ind. Econ. 177, 84.

The above represents Major Austen's views on the synonymy of the species generally known as *strabus*. Their correctness turns on whether the specimen at Kiel or at Copenhagen is the actual type. Major Patton holds diametrically opposite views on this point to Major Austen and if the former is proved correct, the whole synonymy will need reversing to that given by Ricardo in R. I. M., iv, 148-153.

*trinominata*, noun. nov.

*Atylotus angustus*, Big., Mem. Soc. Zool. Ind., i, 2.  
Fr., v, 6521, (1892), [see Macq. 1838].

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*Tabanus angustus*, Wulp, Cat. Dipt. S. Asia, 63, Kert, Cat. Dipt., iii, 221, Surc., Gen. Ins. Fasc. 175, 60

*Tabanus palpalis*, Ric, R. I. M., iv, 212-3, tab xiv, 19, 20<sup>1</sup>, (1911), [ *nec* Brethès, 1909 ].

Not recognized since original description.  
Type redescribed by Ricardo.

*Tabanus*, auctt Ind. *nec* Panzer (1791)

<i>Tabanus tropicus</i> , Lingard, Jo. Trop. Vet. Sci, i, 92-112 <sup>1</sup> , Baldrey, <i>loc. cit.</i> , vi, 271-82 <sup>1</sup> , [transmission expts], Schat. S. S. Bur. Bull, 15, vol. ii <sup>3</sup> , [transmits surra]; Waterbo in Aitch, Zool. Afghan Delimit Comm., 131 <sup>1</sup>	Kathgodam <sup>1</sup> Muktesar <sup>2</sup> (both Himalaya) Padda Sultan (Helmar) ————— Java <sup>3</sup>
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These records probably refer to more than one species. Unless the specimens with which these authors worked can be found, the references will have to remain doubtful.

*Tabanus tuberculatus*, Ricardo

<i>Tabanus tuberculatus</i> , Ric., R. I. M., iv, 220-1 <sup>1</sup> , (1911), Surc., Gen. Ins. Fasc., 175, 87.	Companiganj (Sylhet) Belgatchia (Bengal) <sup>1</sup> Pusa <sup>1</sup> [Villupuram (S. Arcot) Sohanda (Kistna)]
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*Tabanus*, Wiedemann.

<i>Tabanus virgo</i> , Wd., Anal. Ent., 22 <sup>1</sup> , (1824), <i>id.</i> , Ausser. Zweifl. Ins., i, 184; Big., T. A. S. B., ix, 264; Wulp, Cat. Dipt. S. Asia, 59 <sup>2</sup> , Kert, Cat. Dipt., iii, 292, Ric, R. I. M., iv, 136 <sup>3</sup> , Patt. & Cragg, T. B. Med. Ent., 297, [oviposition], tab. xlii, 13-16, Fletcher, Pusa Sci. Repts., (1916-17), 96, [oviposition], Patel, <i>loc. cit.</i> , (1919-20), 100; C. Vet. Dept. Mem. 2, tab. ii, 7 <sup>4</sup> , Fletcher & S. W., Proc., xvth. Ento. Meetg. Pusa, 226; Aust., Trans. R. S. M. & H., xv, 264 <sup>7</sup> , [abs. R. A. E. (B), x, 143], Surc., Gen. Ins. Fasc.	India <sup>1, 2, 5, 6</sup> Madras <sup>1</sup> Mysore <sup>3</sup> Calcutta <sup>3</sup> Pusa <sup>3</sup> Mohand (U. P.) <sup>4</sup> Jhelum Dist. <sup>7</sup> Vizianagram (S. W.) D. Ghazipur (Crosse) Kangra (Crosse) Kotla (Crosse) [Chapra (Bihar) Chicacole Road (Mad. Presidency)]
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- 175, 88, Isaac, Mem. Dept. Agric. Ind., Sur. (Bihar)  
 ix (2) 21, tab. vi. 5. vii, 5, x, 5a-c, Sahawa (Punjab)  
 [bionomics]. Hazaribagh  
*Tabanus albulus*, Wlk., Dipt. Saunde., i, Rawalpori  
 46<sup>2</sup>, (1850); Big., T. A. S. B., ix, 264. Khirida  
 Wulp., Cat. Dipt. S. Asia, 60, Kert., Cuttack  
 Cat. Dipt., iii, 230. Bareilly  
*Tabanus puella*, Wlk., Dipt. Saunde., i, Purulia (Bihar)  
 53<sup>2</sup>, (1850); Big., T. A. S. B., ix, 261: Angul  
 Wulp., Cat. Dipt. S. Asia, 60: Kert., Bhowrah (Champaran)  
 Cat. Dipt., iii, 271.  
**wyvillei**, Ricardo.  
*Theriopteles wyvillei*, Ric., R. I. M., iv, Narkunda<sup>1</sup>  
 229-30<sup>1</sup>, (1911). Kasauli<sup>1</sup> (both W. Himy-  
*Tabanus wyvillei*, Surc., Gen. Ins. Fasc. layu)  
 175, 88.

#### 5. Neotabanus, Ricardo.

- Neotabanus*, Ric., R. I. M., iv, 363, (1911);  
 Surc., Gen. Ins. Fasc. 175, 93.  
 There is an invalid sub-genus of *Tabanus*  
 of the same name, erected by Latz.  
**ceylonicus**, Ricardo.  
*Neotabanus ceylonicus*, Ric., R. I. M., iv, Pundalucya  
 363-4<sup>1</sup>, (1911); Surc., Gen. Ins. Fasc. (Ceylon Mts.)<sup>1</sup>  
 175, 93

#### PANGONINAE.

- Ric., A. M. N. H., (7) v, 105-121 167-181,  
 [revision, tables of genera]; Shiraki,  
 Taihoku Expt. Stn. Bull., (1918), 9,  
 [notes on sub-family]; Surc., Gen. Ins.  
 Fasc. 175, 94-5, [key to genera of  
 World].

#### 6. Corizoneura, Rondani.

- Corizoneura*, Rond., Arch. Zool. Anat.  
 Fisiol., iii, 85, (1864); Ric., R. I. M.,  
 iv, 365; Shiraki, Taihoku Expt. Stn.  
 Bull., (1918), 17-18; D.-Brock.,  
 Bull. Ento. Res., 1, 55-6, [an African

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sp. a bad animal biter ]; Aust., *loc. cit.*, xi, 139, [ the sub-divisions of *Pangonia* Latr. ]; Patton & Cragg, T. B. Med. Ent., 294; Surc., Gen. Ins. Fasc. 175, 125.

## KEY TO THE INDIAN SPECIES OF *CORIZONEURA*.

- Proboscis much longer than the whole body 3  
 Proboscis scarcely longer than the body . *tapirobanes* Wlk.  
 First two joints of front tarsi modified, widened in both sexes. *longirostris* Hardw.  
 First two joints of front tarsi simple . *longirostris* var. *no*  
 Ric.

### *agirostris*, Hardwicke.

- Pangonia longirostris*, Hard., Trans. Linn. Soc. Lond., xiv, 135, tab. vi, 5, 6<sup>1</sup>, (1823); Wd., Ausser Zweif. Ins., ii, 621, 14<sup>2</sup>, Gay in Guiff., Cuvier's Règ. Anim., xv, tab. cxiv, 3, Macq., Ann. Soc. Ent. Fr., vi, 429, tab. xv, 20-23; Wlk., List Dipt. B. M., i, 131, *id.*, *loc. cit.*, v, suppl. i, 139, 101; Roder, Stettin. Ent. Zeit., xlii, 384<sup>3</sup>, [redescr.]; Wulp, Cat. Dipt. S. Asia, 64; Kert., Cat. Dipt., iii, 173; Ric., A. M. N. H., (7)iv, 167-8; Tette, Bull. Ento. Res., viii, 253-267, tab. vi, 11t. figs., [structure of mouth parts], Howlett, Ind. Ins. Life, tab. lxii, 3.
- Nepal<sup>1</sup>, <sup>2</sup>  
 Allahabad<sup>3</sup>  
 Muktesar (Himalay Tibet)<sup>4</sup>  
 Sikkim<sup>5</sup>, <sup>6</sup> <sup>7</sup>  
 Trivandrum (Trs core)<sup>8</sup>  
 Sadiya Dist. (Assam)  
 Shillong  
 Simla.  
 Masuri.

*Corizoneura longirostris*, Ric., R. I. M., iv, 365-6<sup>4</sup>, Mitter, I. Jo. Med. Res., v, 522-8, tab., [method of feeding]; Big., T. A. S. B., ix, 264; Aust., Bull. Ento. Res., xi, 139-152; Surc., Gen. Ins. Fasc. 175, 134.

subsp. *varipes*, Ric., R. I. M., iv, 367<sup>5</sup>, (1911).

*Pangonia amboinensis*, auctt. nec. Fab., Big., T. A. S. B., ix, 264, Wulp Cat. Dipt. S. Asia, 64<sup>7</sup>; Ric., R. I. M., iv, 369.



**taprobanes, Walker.**

- Pangonia taprobana*, Wlk., *Lib.* 19, 4. (1856).  
 B. M., v. suppl. i, 131 (1861); *Wied.* 1862, 1863.  
 Cat. Dipt. S. Asia, 418. Kert., Cat. Dipt. S. Asia, v. Kollar, 1878.  
 Dipt., iii, 71. Ric., A. M. N. H., iv, 167-8. (1878).  
*Chironomus taprobana*, Ric., R. L. M., iv, 367-82; *Aust.*, B. L. Ent. Soc., 1878, 139-152; de Meillon, *Proc.* 1941, Ent. Soc. S. Africa, 1941, 177, 184.  
<sup>2</sup> *Pangonia* *sp.*, Macq., *Dipt.* 4, 10. (1834) suppl. iv, 183 (1840). (*Chironomus*), *Synchr.* H. v. 1840, 1841.  
 Kert., Cat. Dipt. iii, 69. B. M., i, v. 65. *Lib.* 19, 4. (1856).  
 S. B., ix, 264; Wied., Cat. Dipt. 8. *Morena* 1861, 1862.  
 Asia, 61; *Synchr.* Gen. Ins. 175. Kollar (N.H.), 1878, 129.

**7. Gastroides, Say (1823).**

- Gastroides*, Say, *Trans. Ent. Soc. Lond.*, iii, 59, (1844); Kert., Cat. Dipt. iii, 181, Ric., R. L. M., iv, 570, *Synchr.* Gen. Ins. 175, 137.  
*Ditylus*, *pat.*, Big., *Rev. et Mag. Zool.* (2<sup>e</sup>), xi, 305, (1855).

**KEY TO THE INDIAN SPECIES OF GASTROIDES**

1. Thorax and abdomen black, latter in ♂ with basal segments large, rufous . . . . . *pat.* Say.
- Thorax brown with 2 yellowish stripes.  
 Abdomen in ♀ black, 1st and 3rd segments with yellowish, 2nd and 4th with grey hind borders, remaining segments with some red at sides. In ♂ abdomen reddish, shining, a median black spot on each side of first 3 segments, and 2 extra lateral spots on last of these. 2nd segment narrowly black laterally, 4th, black, posteriorly dull yellow; remainder black . . . . . *ornatus* Big.

**ater, Saunders**

- Gastrosulcus ater*, Saund., Trans. Ent. Soc. Central India<sup>1, 2</sup>  
 Lond., iii, 59, tab. v, 1<sup>1</sup>, (1841), *id*, Calcutta<sup>4</sup>  
*loc. cit.*, iv, 223, tab. xiv, 3; Wlk., List Pusa<sup>5</sup>  
 Dipt. B. M., i, 209, *id*, *loc. cit.*, v, Coimbatore (B. M. colln.)  
 suppl. i, 293, 1. Lw., Dipt. Fauna Süd [Chapra  
 Afrik., i, 15; Wulp., Cat. Dipt. S. Asia, Fyzabad (U. P.)  
 64<sup>2</sup>, Ric., A. M. N. H., (7) viii, 298, Surat ]  
*id*, *loc. cit.*, (7) xiv, 372; Kert., Cat.  
 Dipt., iii, 181; Ric., R. I. M., iv, 370-1<sup>1</sup>,  
 tab. xvi, 9, Howlett, Ind. Ins. Life,  
 tab. lxii, 4; Fletcher, Pusa Sci. Repts.,  
 (1915-16), 81, [bionomics]; *id*, *loc.*  
*cit.*, (1920-21), 21, 19, [tree-hole breed-  
 er], Sure., Gen. Ins. Fasc. 175, 137,  
 tab. v, 6a-b; Isaac, Mem. Dept. Agric.  
 Ind., ix (2), 25, tab. vi, 3, vii, 3, ix,  
 3a-e, [bionomics].

**ornatus, Bigot**

- Ditylomys ornatus*, Big., Rev. et Mag. Ceylon<sup>1</sup>  
 Zool. (2) xi, 306<sup>1</sup>, (1859); Wulp., Cat. Colombo<sup>2</sup>  
 Dipt. S. Asia, 63  
*Gastrosulcus ornatus*, Ric., A. M. N. H., (7) Heneratgodra (Ceylon  
 xiv, 372, Kert., Cat. Dipt., iii, 181, plains<sup>2</sup>)  
 Ric., R. I. M., iv, 371-3<sup>2</sup>; Sure.,  
 Gen. Ins. Fasc. 175, 137.

**8. Silvius, Meigen.**

- Silvius*, Meig., Syst. Besch., ii, 27, (1820),  
 Wd., Ausser. Zweifl. Ins., i, 93;  
 Macq., Dipt. Exot., I, i, tab. vi, 1;  
 Schin., F. Austr., i, 43; Ric., A. M. N.  
 H., (7) viii, 290; Sure., Bull. Mus. H.  
 N. Paris, ii, 46; Kert., Cat. Dipt., iii,  
 177; Ric., R. I. M., iv, 373; Shiraki,  
 Taihoku Expt. Stn. Bull., (1918), 10;  
 Patton & Cragg, T. B. Med. Ent., 292;  
 Hill, Bull. Ent. Res., xii, 59-62, figs,  
 [bionomics of an Australian sp.],  
 Sure., Gen. Ins. Fasc. 175, 141.  
*Eradiorhynchus*, Macq., Dipt. Exot., I,  
 111, tab. vi, 1, (1838)

? *Philolche*, Wd., *Ausser. Zweifl. Ins.*,  
I, 95, (1828).

**indianus**, Ricardo

*Silvius indianus*, Ric., *R. I. M.*, iv, 374, Bhura (Nain Tal D.),  
(1911); *Sure.*, *Gen. Ins. Fasc.* 175, 143.

### 9. *Melissomorpha*, Ricardo

*Melissomorpha*, Ric., *Proc. Zool. Soc.*  
*London*, (1906), 97; *Sure.*, *Gen. Ins.*  
*Fasc.* 175, 145.

**indiana**, Ricardo

*Melissomorpha indiana*, Ric., *Proc. Zool. Darjiling*<sup>1</sup>  
*Soc. London*, (1906), 98,<sup>1</sup> (1906); *Sure.*,  
*Gen. Ins. Fasc.* 175, 145, tab. iii, 12a.

### 10. *Chrysopa*, Mogen

#### KEY TO THE INDIAN SPECIES OF *CHRYSOPES*.

[adapted from Ricardo].

1. Wings with a dark transverse band and an apical spot . . . . . 2  
     Wings with a dark transverse band but no apical spot . . . . . *flavivinctus* Ric.
2. Wings with a hyaline sinus in the band in 5th posterior cell . . . . . 3  
     Wings with no hyaline sinus in band in 5th cell . . . . . 8
3. Abdomen yellowish, with black stripes . . . . . 4  
     Abdomen black, whitish or yellowish at base . . . . . 7
4. Discal cell hyaline . . . . . 5  
     Discal cell not hyaline . . . . . 6
5. Abdomen with four long black stripes . . . . . *mlakosiewiczzi* Big.  
     Abdomen with a black bifid stripe on 2nd segment . . . . . *flavipes* Big.
6. Abdomen with short, black, bifid stripe on 2nd segment, often extending to 3rd or 4th . . . . . *dispar* Fb.

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- Abdomen with bifid stripe on 2nd. segment,  
and a network of black markings on  
3rd., leaving only three yellow spots  
free . . . . . *designatus* Ric.
- Abdomen black, 2nd segment yellowish on  
fore border. Face blackish. Apical  
border of wing band straight . . . . . *pellucidus* Fb.
- 1st. abdominal segment yellow, with  
median black spot 2nd. yellow, 3rd.  
blackish, yellow at sides and with 3  
yellow spots. 4th.-6th. segments  
black. Face black. Transverse band  
of wing irregular on both borders . . . . . *pettigrewi* Ric.
- A clear spot in discal cell. Abdomen  
blackish with pale spots . . . . . *stimulans* Wlk.
- No clear spot in discal cell . . . . . 9
- Abdomen yellow, 2nd. segment with a  
black bifid stripe . . . . . *indianus* Ric.
- Abdomen yellow, with a black band in the  
middle . . . . . 10
- Legs and face blackish . . . . . *fasciatus* Wd.
- Legs and face yellowish brown . . . . . *fascissimus* Wlk.

*Chrysops*, Meig., Nouv. Class., 23, (1800) ;  
*id*, Illig. Mag., 267, (1803) ; Ric., A. M.  
N. H., (7) ix, 366-381, 424-431, [ notes  
on Oriental spp. ], *id.*, R. I. M., iv,  
374-7, [ key to Oriental spp. ] ; Kert.,  
Cat. Dipt., iii, 181 ; Shiraki, Taihoku  
Expt. Sta. Bull., (1918), 22-25; Patton  
& Cragg, T. B. Med. Ent., 290-1, [ key  
to Oriental spp. ] ; Kroh, Zool. Jahrb.,  
Syst., xliii, 41-160, 12 figs., tabs. i,  
ii ; Hofim., Arch. Schiffs. Trop. Hyg.,  
xxvi, 244-8, fig., [ medical importance ],  
Surc, Gen. Ins. Fasc. 175, 148-9,  
[ bionomics ].

*signatus*, Ricardo.

*Chrysops designata*, Ric., R. I. M., iv, Sarah (Nepal)<sup>1</sup>,  
288-1, tab. xv, 1<sup>1</sup>, (1911) ; *id.*, loc. cit., Jaulasal (Naini Tal Dis



Belgachia (Bengal)  
 Bankura  
 Margherita (Assam)  
 Sidapur (Coorg)  
 Virajpet (Coorg)  
 Dalhousie  
 Pollibetta (Coorg)  
 Palur (Madras Pres.)  
 Coimbatore  
 Pyinmana (C. Burma)  
 Taliparamba (N. Malabar)  
 Ernad (S. Malabar)  
 Kasargode (S. Kanara)

- Chrysops bifasciata*, Macq., Dipt. Exot.,  
 I, i, 161, (1838)<sup>17</sup>;  
*Chrysops bifasciatus*, Wulp, Cat. Dipt. S.  
 Asia, 65; Kert., Cat. Dipt., iii, 182.  
*Chrysops impar*, Rond., Ann. Mus. Civ.  
 Genoa, vii, 460, (1875).  
*Chrysops ligatus*, Wlk., List Dipt. B. M.,  
 i, 195<sup>18</sup>, (1848); Big., T. A. S. B., lx,  
 264; Wulp, Cat. Dipt. S. Asia, 65.  
*Hematomota lunatus*, Gray in Griff.,  
 Cuvier Règ. Anim., xv, 696, tab. cxiv,  
 4, (1832).  
*Chrysops semicirculus*, Wlk., List Dipt.  
 B. M., i, 196<sup>19</sup>, (1848); Big., T. A. S. B.,  
 lx, 264; Wulp, Cat. Dipt. S. Asia, 65;  
 Kert., Cat. Dipt., iii, 196; Ric., A. M.  
 N. H., (7) ix, 375.  
*Chrysops terminalis*, Wlk., List Dipt. B.  
 M., i, 195<sup>20</sup>, (1848); Big., T. A. S. B.,  
 lx, 264; Wulp, Cat. Dipt. S. Asia, 65.  
 ? *Chrysops flaviventris*, Macq., Dipt. Exot.  
 supp. i, 44<sup>21</sup>, (1845); Wlk., List Dipt.  
 B. M., v, supp. i, 292; Big., T. A. S. B.,  
 lx, 264; Wulp, Cat. Dipt. S. Asia, 65;  
 Kert., Cat. Dipt., iii, 187; Ric., A. M.  
 N. H., (7) ix, 373, *id.*, R. I. M., iv  
 396; Surc., Gen. Ins. Fasc. 175, 151.

Siam<sup>9</sup>  
 Annam<sup>9</sup>  
 F. M. S.<sup>9, 10</sup>  
 Sumatra<sup>4, 9, 9, 12</sup>  
 Java<sup>2, 3, 4, 8, 9</sup>  
 Borneo<sup>6, 17</sup>  
 Philippines<sup>4</sup>  
 Hong Kong<sup>9, 12</sup>  
 Formosa<sup>9, 11</sup>

**fasciatus, Wiedemann.**

- Chrysops fasciatus*, Wd., Dipt. Exot., 163. Schimper: *Asien* 2.  
 31, (1821); *id.*, Ausser. Zool. Ins., 1. Andaman Isls.  
 198, 5; Wlk., List Dipt. B. Mus., 195, —  
*id.*, loc. cit., v, suppl. i, 291-66, 101, F. M. S.  
 Naturk. Tijds. Ned. Ind., xvi, 84, Ambon<sup>2</sup>,  
 Wlk., Proc. Linn. Soc. Lond., ix, 104, Java<sup>1</sup>,  
 38; Wulp., Cat. Dipt. S. Asia, 63<sup>2</sup>; Barneo<sup>2</sup>,  
 Ric., A. M. N. H. (7) ix, 275; Kert.,  
 Cat. Dipt., iii, 186, Surin. Gen. Ins.  
 Fasc. 175, 151.  
*Chrysops fasciatus*, Ric., R. I. M., iv, 391  
 2, tab. xv, 71.

**fixissimus, Walker**

- Chrysops fixissimus*, Wlk., Proc. Linn. Tricomali (Ceylon)  
 Soc. Lond., i, 112, 371, (1836); Wulp.,  
 Cat. Dipt. S. Asia, 65; Kert., Cat. F. M. S.,  
 Dipt., iii, 187; Ric., A. M. N. H. (7) ix, Barneo<sup>2</sup>,  
 ix, 376; Pratt, Jo. Trop. Vet. Sci., ix, 290-42, [F. M. S. distribution]; Surin.,  
 Gen. Ins. Fasc. 175, 151.  
*Chrysops fixissimus*, Ric., R. I. M., iv, 392-32.  
*Chrysops testaceocollaris* Meq.  
*Chrysops unizonatus*, Rond., Ann. Mus.  
 Civ. Genoa, vii, 459<sup>2</sup>, (1873); O. S.,  
 Berl. Ent. Zeit., xxvi, 97.

**flavipes, Meigen**

- Chrysops flavipes*, Meig., Klass., i, 156, 3. Baluchistan<sup>2</sup>  
 tab. ix, 121, (1804); Villen., Ann. Soc.  
 Ent. Fr., lxxiv, 310, 6; Kert., Cat. Asia Minor<sup>2</sup>,  
 Dipt., iii, 187<sup>2</sup>; Ric., R. I. M., iv, 397<sup>2</sup>; C. & S. Europe<sup>1</sup>,  
 Surin., Gen. Ins. Fasc. 175, 151.  
*Chrysops flavipes* var. *ashkabadensis*,  
 Szil. Arch. f. Naturg., 111<sup>2</sup>, (1910).  
*Chrysops perspicillatus* Lw., Neue Brit-  
 tag, iv, 25 5<sup>2</sup>, (1856); *id.*, Verh. Zool.  
 bot. Ges. Wien, viii, 663; Schin., P.  
 Austr., i, 41; Gub., Mem. Soc. Linn.  
 Fr., 1861, 43; Pind., Rev. Ent., ii,  
 223; Griff., Boll. Mus. Zool. & An.

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comp., Torino, x, no 218 6; Ric.,  
A. M. N. H., (7) ix, 426, 430; Aust,  
Bull. Ento. Res., xvi, 8<sup>6</sup>.

**flavocinctus**, Ricardo.

*Chrysops flavocinctus*, Ric., A. M. N. H., Khasia Hills (Assam)  
(7), ix, 380<sup>1</sup>, (1902); Kert., Cat. Dipt., Trincomali (Ceylon)<sup>1</sup>  
iii, 187, Pratt, Jo. Trop. Vet. Sci., iv, Travancore<sup>5</sup>  
390-4<sup>2</sup>, [F. M. S. distribution]; Mohnyin (U. Burma)<sup>2</sup>  
Lefroy, Pusa Bull. 7, 24<sup>3</sup>; Surc., Gen. [Lebong (Darjiling)]  
Ins. Fasc. 175, 151. Gauhati

*Chrysops flavocincta*, Aust., Bull. Ento. Pakokku (Burma)  
Res., xii, 431<sup>4</sup>; Ric., R. I. M., iv, 395-6, Malwun (Burma)]  
tab. xv, 4<sup>5</sup>; S. W., Mem. Dept. Agric.  
Ind., vii, 107<sup>5</sup>.

Borneo<sup>1</sup>  
F. M. S.<sup>2</sup>  
Siam<sup>4</sup>

**indianus**, Ricardo.

*Chrysops indianus*, Ric., A. M. N. H., (7) Nilgiri Hills<sup>1</sup>,  
ix, 379<sup>1</sup>, (1902), Kert., Cat. Dipt., iii, Khasia Hills<sup>1</sup>,  
189; Surc., Gen. Ins. Fasc. 175, 152.

*Chrysops indiana*, Ric., R. I. M., iv, 390-  
1<sup>1</sup>.

**mlukosiewiczzi**, Bigot.

*Chrysops mlukosiewiczzi*, Big., Ann. Soc. Yunnan<sup>4</sup>  
Ent. Fr., (5) x, 146<sup>1</sup>, (1880); Ric.,  
A. M. N. H., (7) ix, 378; Kert., Cat. ? Caucasus<sup>1</sup>,  
Dipt., iii, 191<sup>2</sup>; Ric., R. I. M., iv, 2 Persia<sup>1</sup>, 2, 8  
378-9<sup>3</sup> 401<sup>4</sup>, Shiraki Taihoku Expt. Chusan Archip<sup>3</sup>  
Sun. Bull. (1918), 25-35, tab. 1, 3<sup>5</sup>; Ric., Amoy (China)<sup>3</sup>,  
Bull. Ento. Res., vi, 407<sup>6</sup>; Kröb., Zool. Formosa<sup>6</sup>  
Jahrb. Syst., xliii, 128-9, tab. ii, 55<sup>7</sup>; Hong Kong<sup>6</sup>  
Surc., Gen. Ins. Fasc. 175, 153. S. Ussuri<sup>7</sup>

*Chrysops vranensis*, Big., Mem. Soc. Zool.  
Fr., v, 602<sup>8</sup>, (1891)

*Chrysops striatus*, Wulp., Leyden Mus.  
Notes, vii, 79<sup>9</sup>, (1885); id., Cat. Dipt.  
S. Asia, 66; Ric., A. M. N. H., (7) ix,  
379, Kert., Cat. Dipt., iii, 197.

**pellucidus**, Fabricius.

*Chrysops pellucidus*, Fb., Syst. Antl., 113. Tranquebar<sup>1</sup>  
11<sup>1</sup>, (1805), Wd., Dipt. Exot., 107. 8, Trichino,  
ad., Ausser. Zweifl. Ins., i, 206; Wlk., [Combatore



List Dipt. B. M., i. 200 ; Kert., Cat. Coonor  
 Dipt., iii, 194 ; Big. T. A. S. B., ix, Amlapuram (Coimbatore  
 264 ; Ric., A. M. N. H., (7) ix, 373 ; Dist.)  
 Surc., Gen. Ins. Fasc. 175, 154. Angul]

*Chrysops pellucida* Ric. R. I. M., iv.  
 386-7, tab. xv, 2<sup>2</sup>.

**pettigrewi, Ricardo.**

*Chrysops pettigrewi*, Ric., A. M. N. H., Manipur<sup>2</sup>  
 (8) xi, 452<sup>1</sup>, (1913) ; [Surc., Gen. Ins.  
 Fasc 175, 154.

**stimulans, Walker.**

*Chrysops stimulans*, Wlk., Ins. Saunders, 'India',<sup>2</sup>  
 5, 73<sup>1</sup>, (1850) ; *id*, List Dipt. B. M., v, Pusa<sup>2</sup>,<sup>2</sup>  
 suppl., 265, Big., T. A. S. B., ix, 264 ;  
 Wulp, Cat. Dipt. S. Asia, 65 ; Kert.,  
 Cat. Dipt., ii, 197 Lefroy, Pusa Bull.  
 7, 24<sup>1</sup> ; Ric., A. M. N. H., (7) ix, 376,  
*id*, R. I. M., iv, 389-90, tab. xv, 5<sup>2</sup> ;  
 Fletcher. Pusa Sci. Repts., (1915-16),  
 80, [ bionomics ] ; *id*, *loc cit.*, (1916-17),  
 96, [ oviposition ] ; Patel, *loc. cit.*,  
 (1919-20), 97, [ parasites ] ; Surc., Gen.  
 Ins. Fasc. 175, 154.

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*andamanensis* = *fuscicauda*, *Tabanus*  
*angustilobatus*, *Tabanus*  
*angustus* = *trinomatus*, *Tabanus*  
*annandalei*, *Hæmatopota*  
*asiatica* = *javana*, *Hæmatopota*  
*asikambadensis* = *flavipes*, *Chrysopa*  
*assamensis*, *Hæmatopota*  
*assamensis* = *rubiventris*, *Tabanus*  
*ator*, *Gastroidea*  
*atrohirtus*, *Tabanus*  
*auriflamma*, *Tabanus*  
*austriatus*, *Tabanus*

## B

*beesoni*, *Hæmatopota*  
*bicallus* = *macer*, *Tabanus*  
*bicinctus*, *Tabanus*  
*bifasciatus* = *dispar*, *Chrysopa*  
*bihneata*, *Hæmatopota*  
*bispunctatus* = *ditomatus*, *Tabanus*  
*birostratus* = *ditomatus*, *Tabanus*  
*birmanicus*, *Tabanus*  
*brevis*, *Hæmatopota*  
*brunnea*, *Udenocera*  
*brunnipectus*, *Tabanus*  
*burnianus*, *Hæmatopota*

## C

*calidus* = *rubidus*, *Tabanus*  
*cana*, *Hæmatopota*  
*ceylonicus*, *Tabanus*  
*chinensis* = *tenax*, *Tabanus*

*conicus* = *albimedius*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*  
*concolor* = *virgo*, *Tabanus*

## D

*dimidiatus*, *Hæmatopota*  
*dimidiatus*, *Tabanus*  
*dispar*, *Chrysopa*  
*dispar*, *Tabanus*  
*dispar*, *Chrysopa*  
*dispar*, *Hæmatopota*  
*ditomatus*, *Tabanus*  
*diversus*, *Tabanus*  
*diversus* = *tenax*, *Tabanus*

## E

*equus*, *Tabanus*  
*equus* = *opisthus*, *Tabanus*  
*exclusus*, *Tabanus*  
*expansus*, *Tabanus*

## F

*fasciatus*, *Hæmatopota*  
*fasciatus*, *Chrysopa*  
*fasciatus*, *Chrysopa*  
*fasciatus*, *Tabanus*  
*fasciatus*, *Chrysopa*  
*fasciatus*, *Tabanus*  
*fasciatus*, *Tabanus*  
*fasciatus* = *dispar*, *Chrysopa*  
*fasciatus*, *Chrysopa*  
*fulvescens*, *Diachlorus*  
*fulvipes*, *Tabanus*  
*fuscicauda*, *Tabanus*  
*fusciorura*, *Tabanus*  
*fuscifrons*, *Hæmatopota*  
*fuscifrons* = *ditomatus*, *Tabanus*  
*fuscimaculatus*, *Tabanus*

## G

glaber, Tabanus

## H

hilaris = striatus, Tabanus  
hindostani, Hematopota  
hirtipalpis, Tabanus  
hirtistriatus, Tabanus  
hirtus, Tabanus  
hybridus, Tabanus

## I

immaculata, Hematopota  
impar = dispar, Chrysops  
inconspicua, Hematopota  
indiana, Hematopota  
indiana, Melissomorphia  
indiana, Tabanus  
indianus, Silenus  
indianus, Chrysops  
indianiminatus, Tabanus  
intermedius = cygneti, Tabanus  
internus = rubicundus, Tabanus  
iranensis = mlkosiewiczzi, Chrysops

## J

javana, Hematopota  
joidus, Tabanus  
juvenculus, Tabanus

## K

kashyensis, Tabanus  
khasensis, Tabanus

## L

lachrymans = rubidus, Tabanus  
lati, Hematopota  
latifrons, Hematopota  
leani, Tabanus  
leucogonematus, Tabanus  
leuechirtus, Tabanus  
leucopogon, Tabanus  
ligatus = dispar, Chrysops  
linbata, Hematopota  
litoralis, Hematopota  
longirostris, Corizoneura  
lunatus = dispar, Chrysops

## M

macor, Tabanus  
malensis = tenens, Tabanus  
manipurensis, Tabanus  
marginata, Hematopota  
megatops = tenens, Tabanus  
melanognathus, Tabanus  
melanopygatus = fulvomedius, Tabanus  
mentitus = imbanus, Tabanus  
mlkosiewiczzi, Chrysops  
monilifer = rubicundus, Tabanus  
monoteniatus, Tabanus  
montana, Hematopota

## N

nemophilus, Tabanus  
nephode, Tabanus  
neobarensis, Tabanus  
nigra = javana, Hematopota  
nigromaculatus = ditenuatus, Tabanus  
nigropictus, Tabanus  
non optatus = melanognathus, Tabanus

## O

obconicus, Tabanus  
optatus, Tabanus  
orientis, Tabanus  
ornatus, Gastroxides  
oxyceratus, Tabanus

## P

pagodinus = fulvomedius, Tabanus  
palpalis = rubidus, Tabanus  
parallelus = brunnea, Udenocera  
partitus = striatus, Tabanus  
pellucidus, Chrysops  
perlina = orientis, Tabanus  
persis = pulverifer, Tabanus  
perspicillaris = flavipes, Chrysops  
pettigrewi, Chrysops  
piscus = rubidus, Tabanus  
provincialis, Tabanus  
puella = virgo, Tabanus  
pulchellus, Tabanus  
pulverifer, Tabanus  
puteus, Tabanus  
pyrrhus = ditenuatus, Tabanus

## R

rhizophora, *Hamatopota*  
 richardsoni, *Hamatopota*  
 ruralis, *Hamatopota*  
 rubicundus, *Tabanus*  
 rubula, *Hamatopota*  
 rubus, *Tabanus*  
 rufus = *taprobanea*, *Chironomus*  
 rufiventris, *Tabanus*  
 ruficallosus = *striatus*, *Tabanus*

## S

salicis = *nephodes*, *Tabanus*  
 sanguineus = *rufiventris*, *Tabanus*  
 semicirculatus = *dispar*, *Chrysopa*  
 sexnotus, *Tabanus*  
 apoclaus, *Tabanus*  
 stimulans, *Chrysopa*  
 striatipennis, *Hamatopota*  
 striatus, *Tabanus*  
 striatus = *mlokoiewiczi*, *Chrysopa*  
 subcallosus, *Tabanus*  
 submerescens, *Tabanus*  
 subnervus, *Tabanus*  
 suffus, *Tabanus*

## T

taprobanea, *Chironomus*  
 tenuirostris, *Tabanus*  
 tinens, *Tabanus*  
 terminatus = *dispar*, *Chrysopa*  
 tessellata, *Hamatopota*  
 testaceipes = *viridis*, *Chrysopa*  
 trichocapitis = *mauri*, *Tabanus*  
 tridentata, *Tabanus*  
 "tropicus" *Tabanus*  
 tuberculatus, *Tabanus*

## U

umbrosus = *rubidus*, *Tabanus*  
 unizonata, *Hamatopota*  
 ussuriensis = *harporus*, *Chrysopa*

## V

vagus = *rubidus*, *Tabanus*  
 viridis = *longicauda*, *Chironomus*  
 virgo, *Tabanus*

## W

wyillii, *Tabanus*

